# Premie HAL®

Premature Neonatal Simulator

## S3009

Gaumard®
Simulators for Health Care Education

Premie HAL is an interactive educational system developed to assist a certified instructor. It is not a substitute for a comprehensive understanding of the subject matter and not intended for clinical decision making.

**User Guide B 12.7.1**
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# Care and Cautions

# Overall Warnings

Remember that damage caused by misuse is not covered by your warranty. It is critical to understand and comply with the following guidelines. Additional warnings are found throughout the documentation

If the simulator will not be used for an extended period, re-charge the battery at least once every 3 months to prevent damage to the battery.

Do not attempt to intubate without lubricating the airway adjunct with a silicone oil lubricant (provided). Failure to do so will make intubation very difficult and is likely to result in damage.

NEVER disconnect the communications module while the GaumardUI software is running. The software will halt, and the module may be damaged.

When simulating drug administration via endotracheal tube, providers must use an empty syringe. Passing liquids into the trachea or esophagus may cause internal damage.

Premie HAL should be cleaned with a cloth dampened with diluted liquid dishwashing soap. If medical adhesives remain on the skin, clean with alcohol wipes. **DO NOT USE "GOO GONE"** as the citric acid in the formula will cause pitting of the various materials comprising your simulator.

Store Premie HAL in a cool, dry place. Extended storage above 85 degrees Fahrenheit (29 Celsius) will cause the simulator to soften and slowly warp. It is acceptable to operate Premie HAL at an ambient temperature of 95 degrees Fahrenheit (35 Celsius).

Premie HAL is "splash-proof" but not water-proof. Do not submerge or allow a large volume of fluid to enter the interior of the simulator. Do not expose the tablet computer to water or excessive dust unless it is protected by a rugged case (available separately).

Mouth to mouth resuscitation without a barrier device is not recommended, as it will contaminate the airway. Treat Premie HAL with the same precautions that would be used with a real patient.

The use of needles larger than 22 gauge will reduce the lifetime of the lower arms' skin and veins.

When the arm veins require replacement, contact Gaumard to arrange for a lower arm exchange. Refer to the Consumables and Replacement Parts section of this guide, and contact customer service for more information.

Do not inject fluids into the intramuscular sites. Intramuscular sites are for placement exercises only.

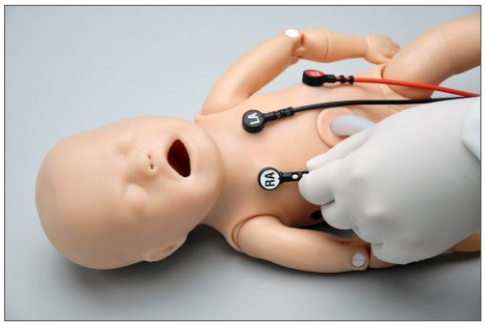
Do not remove or replace the umbilical cord while Premie HAL is in operation. Doing so will cause damage to the system.

Do not pull or carry the simulator by the limbs. Handle Premie HAL with the same care as a human patient.

# Electrical Therapy

Premie HAL's conductive skin sites allow the attachment of real EKG electrodes. This feature permits the user to track cardiac rhythms with their own equipment just like with a human patient. A few special concerns are described below.

Premie HAL does not accept real electrical therapy. **Do not pace or defibrillate Premie HAL with real electrical equipment.**



The Gaumard User Interface features a virtual electrical therapy function to simulate defibrillation or pacing.

# Getting Started

# Overview

## GENERAL

- Tetherless and fully responsive even while being transported
- Powered from an internal rechargeable battery or wall outlet using power adapter
- Battery capable of 300 recharges and
- Simulator receives commands from a wireless tablet PC and operate at distances up to 150 feet
- Option to operate automatically using Automatic mode or manually by the Instructor
- Training Guide with both basic and advanced interactive scenarios
- Use pre-programmed scenarios, modify them or create your own quickly and easily
- Installation and training worldwide
- Simulation Made Easy ™

## AIRWAY

- Oral and nasal intubation
- Use an ET tube or LMA
- Unilateral chest rise with right main stem intubation
- Multiple upper airway sounds synchronized with breathing

## APPEARANCE

- Color responds to hypoxic events and interventions (healthy, mild cyanosis, severe cyanosis)

## BREATHING

- Control rate and depth of respiration and observe chest rise
- Ventilation is measured and logged
- Select independent left and right lung sounds
- Chest rise and lung sounds are synchronized with selectable breathing patterns
- Accommodates assisted ventilation, including BVM and mechanical support
- Unilateral chest rise

## CIRCULATION

- Conductive skin regions allow for ECG monitoring with real equipment
- Multiple heart rhythms, rates and complications
- Heart sounds include a normal heart as well as atrial and ventricular septal defects
- Chest compressions are measured and logged
- Palpable fontanelle, brachial, femoral, and umbilical pulse sites
- Pulse strengths vary with blood pressure and pulses are synchronized with ECG

## SIMULATOR

- Internal rechargeable NiMH battery
- Venous access
- Bilateral IV training arms
- Patent umbilicus
- Intraosseous access at tibia

## CONTROL

- Wireless tablet PC with stylus control
- Communication modules are FCC and CE Compliant
- Communications module can be used simultaneously with the tablet computer's integrated wireless (IEEE 802.11b) networking device

## ACCESSORIES

- 100-240 VAC Charger
- Power supply adapter
- Battery Charger
- Instructions
- Carrying case

## OTHER

- One year limited warranty, extended warranty to three years option
- Installation and training services available

# Terminology

It is wise to spend a moment familiarizing yourself with some of the terminology that will be used to discuss simulation with the Premie HAL system.

Automatic Mode - In this mode, vital signs respond automatically to caregiver participation, instructor specifications, and pharmacologic intervention. The model used in this operating mode was developed based on physiologic principles. Features unique to this mode include: a comprehensive list of drugs for easy administration, a drug profile editor for adding new drugs or editing existing ones, among other things.

Facilitator - the person conducting the simulation; an instructor or lab staff member.

GUI - the Gaumard User Interface - is the software application, used to control the simulator and evaluate care providers.

Palette - a collection of Palette Items. Each profile has its own palette.

Palette Item - Any full or partial set of physiological parameters that have been grouped and saved together under a single name.

Profile - a unique Premie HAL software configuration, including custom Palette, Scenarios, and options. Each Profile acts as a separate program, in that changes made to one profile have no effect on the others.

Provider - a person participating in the simulation as a healthcare provider.

Scenario - a saved sequence of physiological states, like a "playlist." Scenarios provide a level of automation that unburdens the facilitator and allows standardized presentation of symptoms.

Scenario Item - a Palette Item that is part of a scenario. Scenario Items may also represent a fixed delay period ("Wait") or a pause ("Wait Indefinitely").

Stylus - a special pointing device for the tablet computer. The stylus is the fastest and easiest means of controlling the Premie HAL software. See the Equipment Set-up section of this guide for more information on working with the stylus.

# Equipment Set-up

# Control Tablet Computer

The touchscreen tablet computer serves as the simulator's control center. Startup and control commands are sent from the Gaumard control software (GaumardUI) to the simulator wirelessly using the RF communication module shown in the next section.

Please refer to the computer's documentation for important user and safety information before powering on the tablet computer for the first time.

## USING THE STYLUS

The stylus operates very much like a mouse. You will notice that the pointer moves when the stylus is held near, but without touching the screen. Tapping the screen with the stylus tip is like clicking the primary (usually left) mouse button. Holding the stylus button while tapping the screen is like clicking the secondary (usually right) mouse button.

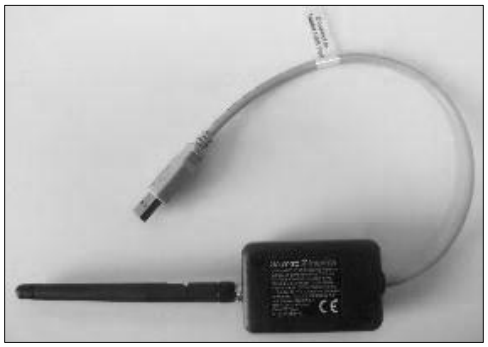
## CALIBRATING THE STYLUS

For working with the Gaumard control software and many other applications, the stylus input is far superior to a mouse in both speed and comfort. An additional advantage is it can be easily calibrated for your personal comfort.

The calibration utility found in the control panel will present the user with crosshair targets at each of the four corners of the screen. Position yourself and the tablet as if you are working, and carefully touch the exact center of each of the targets. After calibration, the pointer should be displayed directly beneath the stylus tip. Significant changes to viewing angle should be followed by calibration for best performance.

## Communications Module

Connect the RF communication module to an available USB port on the tablet's/PRO+ left side.



Secure the RF communication module to the tablet or PRO+ computer using the Velcro patch.

The tablet is now ready to communicate with simulator. For information about the signal strength indicator, go to page 20.

**Warning:** Never disconnect the communications module while the Premie HAL software is running. Doing so can seriously damage the module.

# Premie HAL Battery

Premie HAL (S/N p6009067 or higher) includes two separate power adapters labeled “Premie HAL Charger” and “Premie HAL Power Supply”. Before using the simulator for the first time, reference the use for each adapter below.

## CHARGING THE BATTERY

To charge the battery, connect the adapter labeled “Premie HAL Charger” to the battery port and charge Premie HAL for 2-3 hours (or until the charger displays a green light). The charger indicator light will show red during the charge period and green once the process is complete.

**The simulator’s battery charges only when the control software is disabled.**

Avoid using the simulator while the battery charger is connected. If the simulator is in use while the charger is connected, the battery will not charge. To charge the battery you must:

1. If connected, unplug the charger adapter from the simulator and the wall outlet.
2. Turn off the simulator by closing the GaumardUI control software.
3. Re-connect the charger adapter to the wall outlet and the simulator’s battery port.
4. Leave the simulator charging for 2-3 hours with the GaumardUI control software disabled.

## BATTERY LIFE

Premie HAL has a maximum battery runtime of approximately 2 hrs. Total runtime is dependent on factors such as breathing rate and sounds.

The battery status is displayed on the software status panel after the connection with the simulator is established. For more information about the battery indicator, refer to page 20.

**Warning:** If the simulator will not be used for an extended period, re-charge the battery at least once every 3 months to prevent damage to the internal battery.

## USING THE POWER SUPPLY (SYSTEM S/N p6009067 OR HIGHER)

The power supply adapter allows the simulator to operate through long simulations sessions by drawing power from the wall outlet and not battery reserve. Use the power supply for simulation sessions lasting 2 hours or more. If simulation sessions are shorter than 2 hours, use the simulator’s battery reserve.

**The power supply adapter will NOT re-charge the battery. Avoid using the power supply adapter when the simulator’s battery is completely depleted.**

To use the power supply adapter:

1. Fully charge the simulator’s battery using the “Charger” adapter.
2. Disconnect the “Charger” and connect the “Power Supply” adapter.
3. Activate the GaumardUI software.

   The GaumardUI battery icon will display a lightning icon when the power supply is connected.

**Please contact Gaumard for information on the power supply upgrade for earlier Premie HAL models.**

# Virtual Monitor

The optional virtual patient vital sign monitor system works with GaumardUI to receive and display the simulator's vital sign information. The system includes an all-in-one touchscreen computer and the Gaumard Virtual Monitor software.

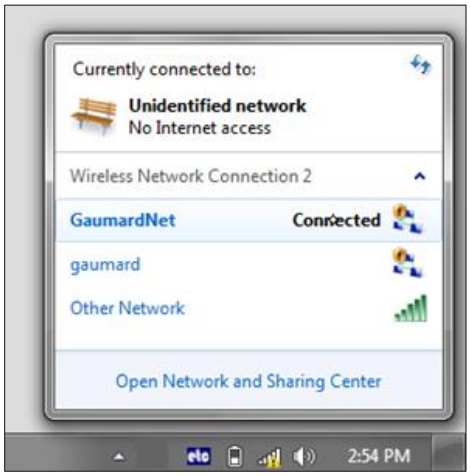
## EQUIPMENT SETUP

Please refer to the documentation included with the all-in one computer for important safety, installation, and start-up information. Secure all the system's connection and power on the touchscreen computer as indicated by the product's documentation.

## WIRELESS AD-HOC CONNECTIVITY

The tablet and virtual monitor computer automatically establish an **ad-hoc** (computer-to-computer) wireless connection at startup. The wireless connection between both systems allows GaumardUI to update the vital signs information displayed on the Gaumard Monitors program.

To verify the connection between the computers, click on the wireless icon located on the task tray of both the tablet and virtual monitor. For troubleshooting information on the ad-hoc connectivity, navigate to page 121.




## Gaumard Monitors

After the ad-hoc connection is established, double click or tap the Gaumard Virtual Monitors icon located on the virtual monitor's home screen.

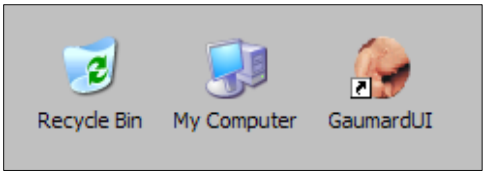
The Gaumard Virtual Monitor software is now ready to receive vital sign information.

To learn more about the Gaumard Monitors features and functionality, click then V menu and select Help to open a digital copy of the Gaumard Virtual Monitor User Guide.

# Working with GaumardUI

# Initializing Premie HAL

After reading the Care and Cautions, and Equipment Set-Up section of the guide, double click the “GaumardUI” icon on the tablet’s home screen to start the simulator.

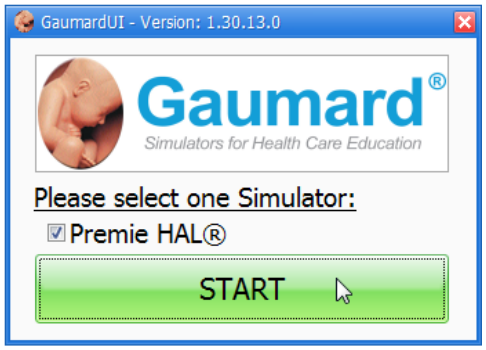



If you are working with the PRO+ system, login by entering admin for the user name and password fields, then click submit to continue.

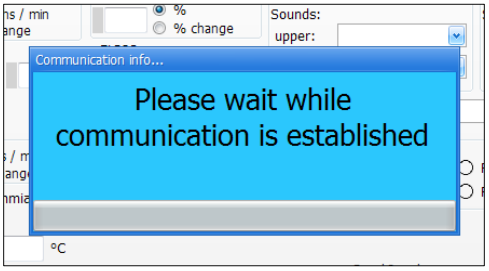
**User Name:** admin

**Password:** admin

The simulator selection menu is shown. Select Premie HAL and click “Start”.



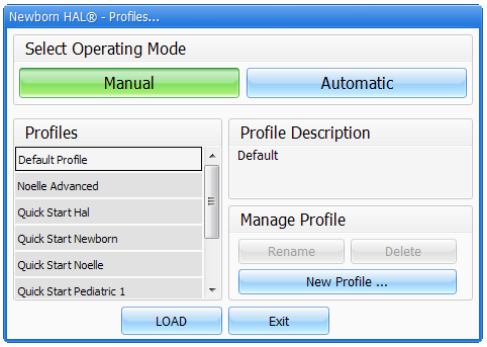

The RF link between the computer and the simulator is established in approximately 1 minute or less.




When the GaumardUI is not active, the simulator is in stand-by. To troubleshoot connection and startup issues, go to page 121.

# Profiles and Operating Modes

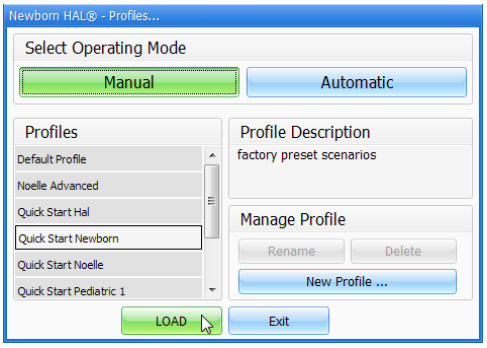
After the startup screen, the profile and operating mode selection menu is shown.




The GaumardUI control software has two modes of operation: Manual and Automatic. Each mode includes a Quick Start profile with preprogrammed scenarios exercises created in conjunction with experienced healthcare instructors and working medical professionals. Continue to the next section to learn more about the each operating mode and the profiles included. After selecting an option for each, click “Load” to continue.

## Manual Mode

In the manual operating mode, the facilitator programs the simulator’s vital signs independently.



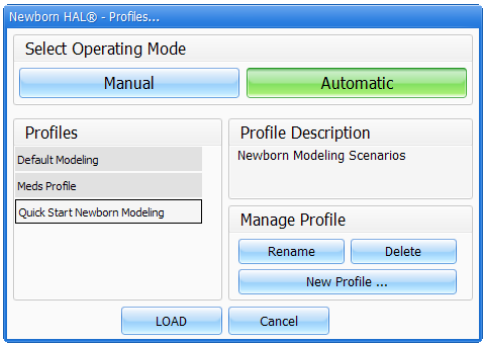
The profiles available under Manual Mode are the following:

**Default Profile** – includes one preprogrammed palette with healthy vital signs.

**Quick Start Premie HAL** – contains nine preprogrammed scenarios exercises.

## Automatic Mode

In the automatic mode, the software's physiologic model assists the facilitator by automatically changing vital signs in response to caregiver participation, pharmacologic intervention, and manual input. The physiologic model calculates responses based on physiologic principles. For example, when facilitator increases the heart rate, the physiologic model will calculate the response and automatically adjust the blood pressure. To activate this operating mode as an upgrade option, go to page 85. For more information on this mode and its features, go to page 25.




The profiles available for the Automatic operating mode are:

**Default Modeling** – includes one preprogrammed palette with healthy vital signs.

**Meds Profile** – contains a library of preprogrammed medications.

**Quick Start Premie Modeling** – includes four linear scenarios and six branching scenario allowing instant simulation of a wide range of conditions.

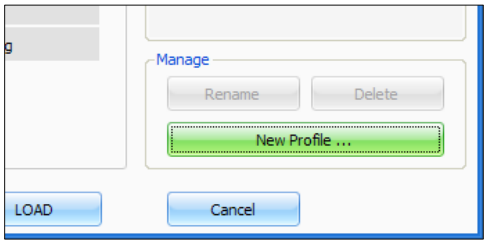
For more information on each of the scenario exercises included with the Quick Start profile, go to page 47.

## CREATING A NEW PROFILE

Profiles store palette, scenario, and option settings independently; changes made to one profile have no effect on the others. Below are some examples on how profiles are used.

- Assign one profile to each user of your Gaumard simulator system
- Use profiles to organize and protect palettes and scenarios
- Create a profile dedicated to a specific academic course taught by multiple instructors
- Devote an entire profile to one particular subject area, or even one particular scenario

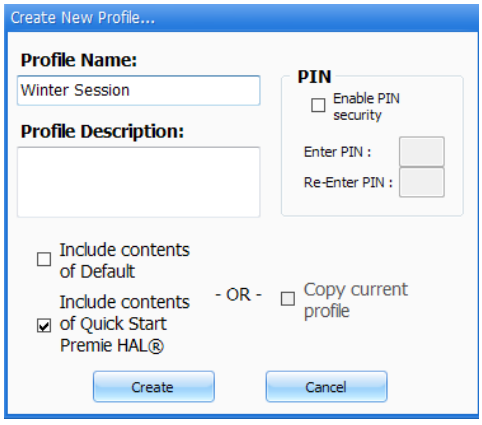
To create a new profile, click "New Profile".




Enter a name for the new profile followed by a description.

To include scenarios and palettes from other profiles, click the check box. For security, enable PIN protection and enter a four-digit key

Finally, click **create** to save the new profile. To import and export profiles, navigate to page 81.



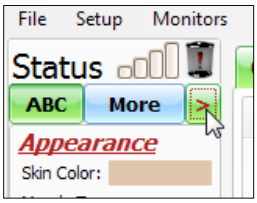
# Environment

The GaumardUI environment is used by the facilitator as the simulation command center. In addition to controlling the simulator's functionality and vital signs, the facilitator can evaluate student training. This powerful combination of tools provides the facilitator with an indispensable tool for simulation, training, and testing.

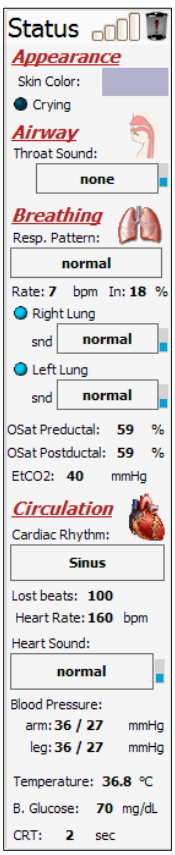
## STATUS PANEL

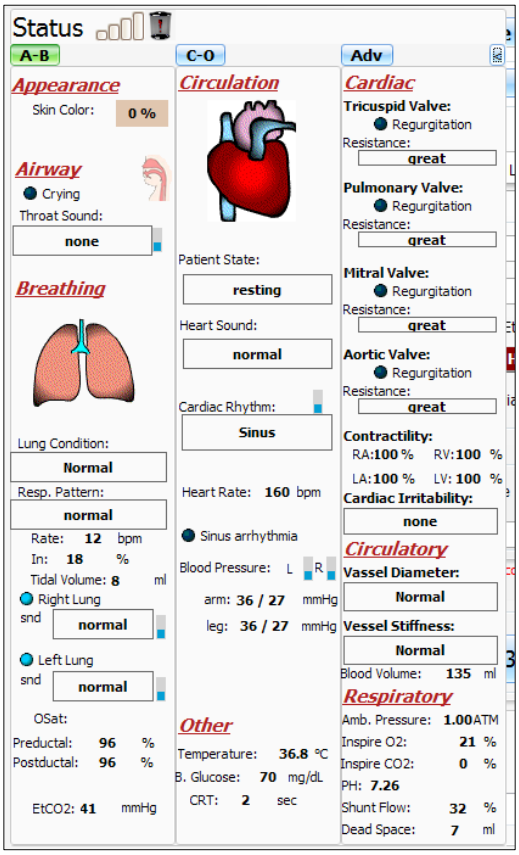
The Status panel is visible along the left edge of the GaumardUI window at all times. After the connection with the simulator is established, the status panel displays the current information about the battery level, signal strength, volume controls/levels, and vital signs in real time.

Click the right arrow to expand the status viewer.



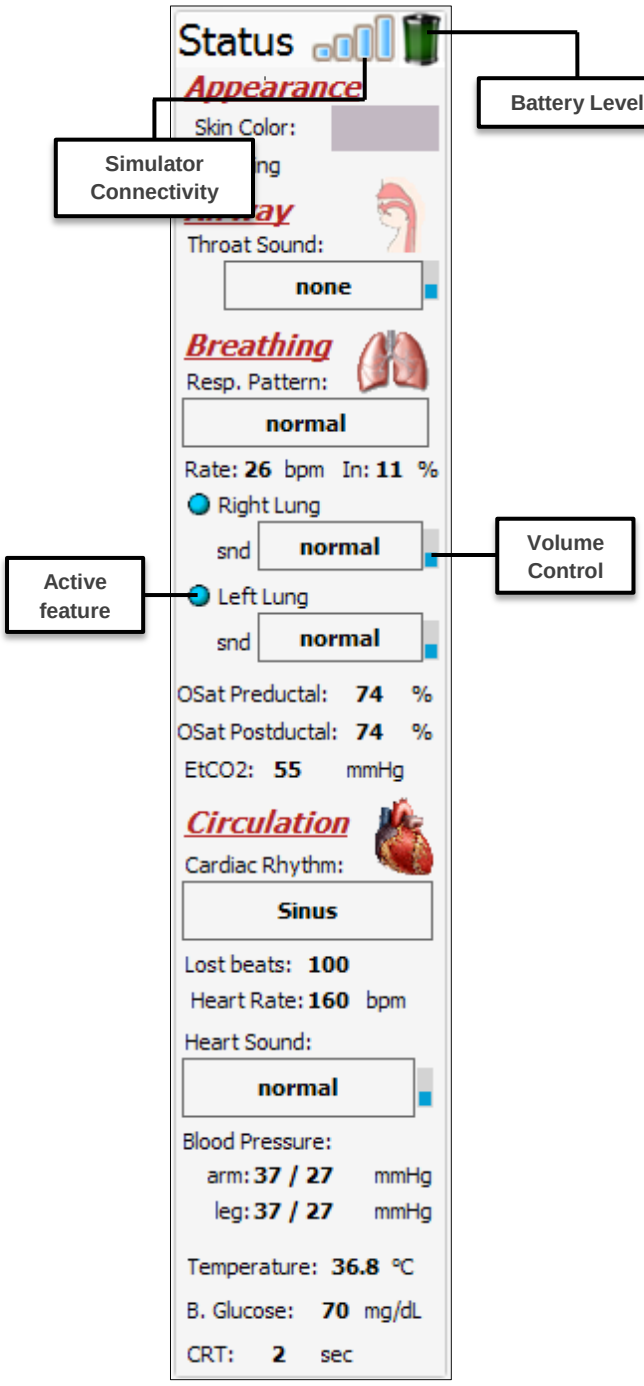

## MANUAL MODE AUTOMATIC MODE



Status panel entries and features mirror the simulator's hardware configuration. Light blue icons show active features and values undergoing changes are highlighted yellow. Click on the volume bars to adjust the volume of each sound.

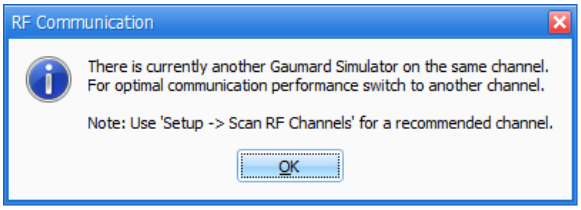
**Some status panel entries and features might not be visible depending on the simulator's hardware configuration.**



## SIGNAL STRENGTH INDICATOR

The communication indicator shows the status of the radio link between the control computer and the simulator. Full bars indicate excellent communication between the computer and the simulator (i.e., normal operation). The indicator is clear when no attempts to communicate with the simulator are being made; for example when the module is not connected to the computer or the system is in STAND-BY mode.

The warning icon indicates a signal conflict with another simulator. Click the exclamation icon for more information. To configure individual communication channels for each simulator manually, go to 84.


RF Communication
There is currently another Gaumard Simulator on the same channel.
For optimal communication performance switch to another channel.
Note: Use 'Setup -> Scan RF Channels' for a recommended channel.
OK

## BATTERY INDICATOR

The battery status indicator progresses as the battery in the simulator is used. Premie HAL has a maximum battery runtime of approximately **2** hrs. Total runtime is dependent on factors such as breathing and sounds.

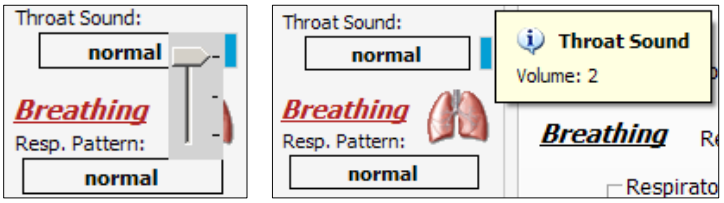
The exclamation mark indicator is shown when there is no communication with the simulator and the program cannot get the battery information. The bolt symbol indicates that the power supply is connected.

When the battery is so low that the indicator turns blinking red, the simulator is sent automatically to STAND-BY mode (to protect some of the simulator's internal components) and will not operate until the battery is recharged.

**Please note that the power supply will not re-charge the battery and an initial charge is necessary for the power supply to maintain Premie HAL operating. To recharge the battery, turn off the GaumardUI software, and connect the adapter labeled “Charger”.**

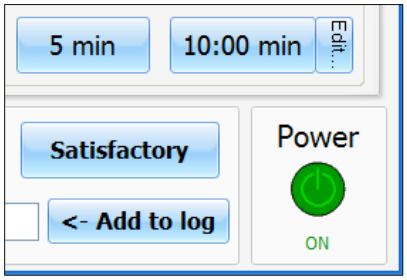
## SIMULATOR VOLUMES

The volume of each sound can be adjusted from the Status Panel. Click on the volume level indicator next to each sound and a volume control will display. Select the volume level you want and the sound will be adjusted instantly on the simulator (i.e., there is no need to click “Apply”).



## SOFT POWER AND STANDBY

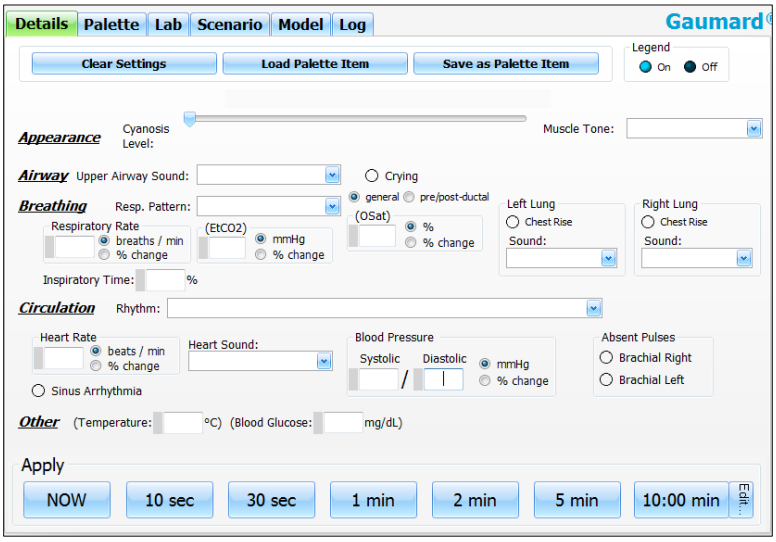
The standby button is located on the bottom right corner of the GaumardUI software. Use the standby mode to save battery power between exercises.




Premie HAL will establish a connection less than one minute after resuming from standby. The connection bars will display the connection strength, confirming that the wireless RF link between the controller and model has been established.

# Details

It is best to think of controlling the simulator in terms of three levels of complexity: Details, then the Palette, and finally Scenarios. From the details tab, facilitators can manually control the simulator's vitals, enable/disable features, or complications and create **palette items** later used to build **labor scenarios**. Changing controls directly from the details page is the simplest form of control available to the facilitator.

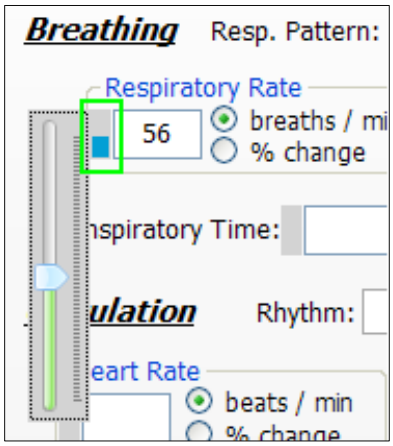



Vital controls are divided in several categories. For each vital control on the details tab, there is a corresponding entry on the status panel providing real time information.

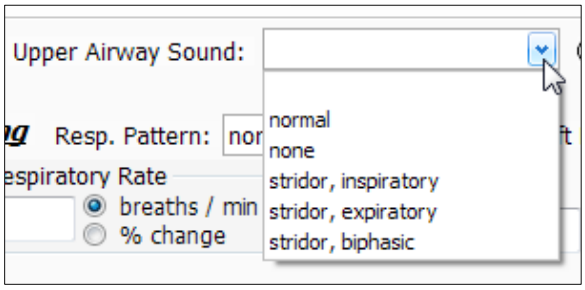
## CHANGING VITALS

Set the changes on the available fields, and then use the **Apply panel** located at the bottom of the Details tab area to submit. GaumardUI only sends updated vital information to the simulator and the virtual monitors; **settings not specified will remain unchanged**. Outlined below are common control behaviors in the Manual operating mode.

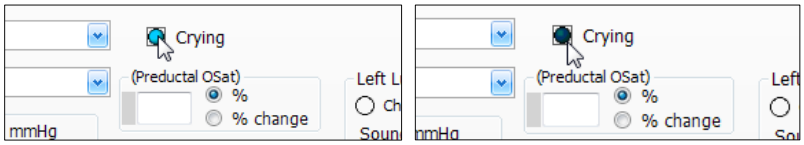
Click or tap **slider control** to adjust numerical values using the stylus. Alternatively, use the **onscreen keyboard** to manually type in a numerical value.



Click on the **down arrow** to access sound types and rhythms.



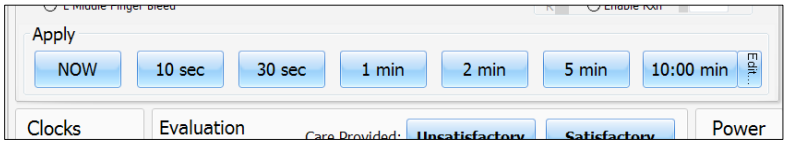

Click on the **feature control button** to enable (blue) or disable (black) features such as crying. Some feature controls may not be available depending on the simulator configuration. No changes will be made to the simulator until the new settings are submitted using the apply panel.




For more information about the simulator's features, navigate to the **Working with Premie HAL** section of this guide.

## APPLY PANEL

After the settings are selected in the details area, changes are submitted using any of the apply buttons located near the bottom of the page.

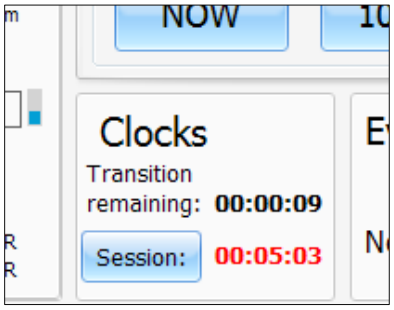



Click the **NOW** button to change the simulator's condition instantly. Alternatively, click a **trending time** to gradually increase or decrease to the numerical value specified (e.g. heart rate, blood pressure) in the time allotted. The right-most button can be customized to any transition time you require by clicking the part of the button labeled "Edit".

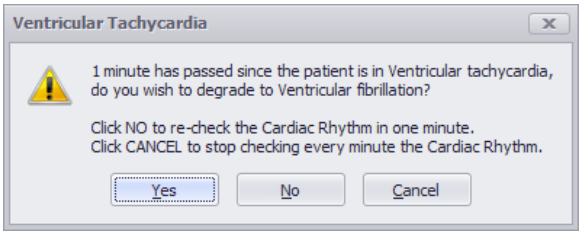
**Please note that settings not specified will remain unchanged.**

Some settings are applied immediately, such as cardiac rhythm and breathing pattern, while numerical settings, such as heart rate and respiratory rate, can be easily made to transition.

As transitions are applied, the time remaining in the transition is displayed in the **Clocks** panel at the bottom of the GaumardUI window. If there is already an ongoing transition at the moment you click an Apply button, it will stop, and a new transition will begin from the current physiological state.

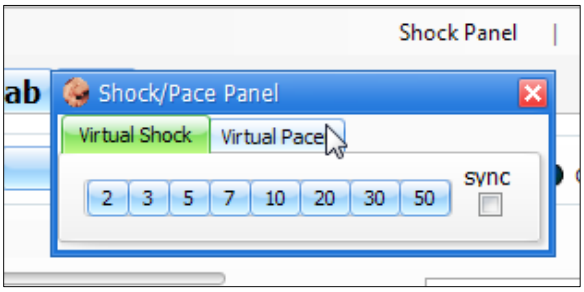


When cardiac rhythm is maintained at Ventricular Tachycardia for one minute, the following prompt dialog box will be displayed:


Ventricular Tachycardia
1 minute has passed since the patient is in Ventricular tachycardia, do you wish to degrade to Ventricular fibrillation?
Click NO to re-check the Cardiac Rhythm in one minute.
Click CANCEL to stop checking every minute the Cardiac Rhythm.
Yes
No
Cancel

Click **Yes** to degrade the cardiac rhythm to **ventricular fibrillation**. Click **No** to maintain the cardiac rhythm and recheck after 1 more minute. Click **Cancel** to stop the software from checking the cardiac rhythm every minute.

To use virtual electrical therapy, click the shock panel shortcut near the top of the screen. If the Shock Panel shortcut is not displayed, click Setup>Options>General and check mark “Show defibrillation/cardioversion/pacer panel” on the menu bar.

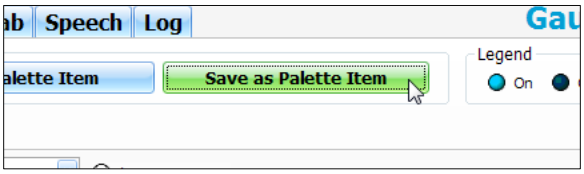



## PALETTE ITEMS

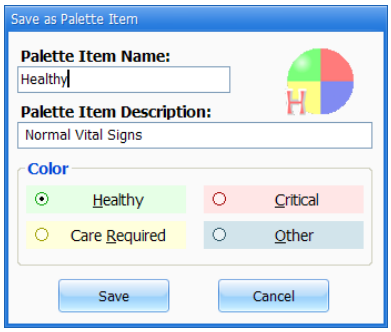
The Details page is also used to create Palette Items. A **Palette Item** is any full or partial set of physiological parameters that have been grouped and saved together under a single name. A collection of these palette items applied in succession are referred to as a **scenario**. For more information about scenario building, navigate to page 33.

## CREATING PALETTE ITEMS

To create a Palette Item, choose the desired parameters on the Details page and click the Save as Palette Item button near the top of the page.



You will be prompted to name the palette, specify a description, and color code. Click **Save** to create the new palette Item. Navigate to the Palette tab to view a collection of all the palette items in the current profile.



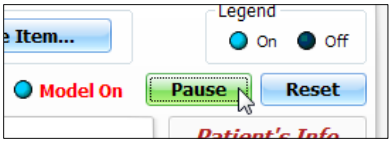

## AUTOMATIC MODE

In the automatic mode, the software's physiologic model assists the facilitator by automatically changing vital signs in response to caregiver participation, pharmacologic intervention, and manual input. For example, if the instructor increases the heart rate, the physiologic model will calculate a realistic response to the event and automatically adjust the blood pressure values.

If the Automatic mode option is not available on the Profiles menu, click "Setup>Options>Other" and enter the code included the feature in the **Model Activation Code** field. To switch between operating modes without restarting the software, click File>Profile.

## PHYSIOLOGIC MODEL

The physiologic model is a software engine that calculates responses based on physiologic principles. Click the "Pause" button located on the right panel to freeze the model calculations during lectures, and then to resume. To return the patient to the initial state, click "Reset".



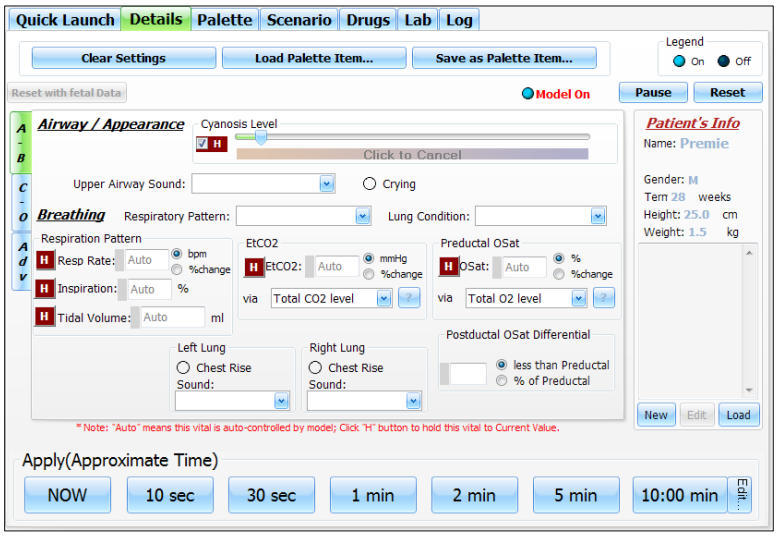

## PATIENT PROFILE

Patient files store general information such as weight, height, and age. The physiologic model factors in the patient's weight as it adjust related physiological parameters. GaumardUI includes several preprogrammed patients in the Quick Start Modeling profile. For more information on the each patient profile, go to page 90.

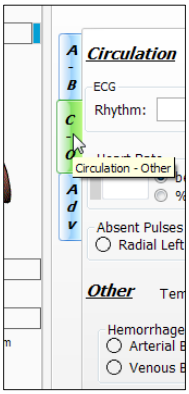
Premie is the default patient loaded when the Quick Start Modeling Profile is selected and it is an ideal candidate for most simulations. Information about the patient is shown on the right panel. For information on creating new patient profiles, go to page 90.

## AUTOMATIC MODE CONTROLS

In the automatic mode, the Details tab includes additional vital sign parameters and control options.

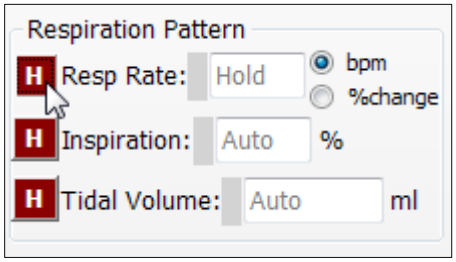



To navigate between the vital sign parameter categories, click the vertical tabs. The tabs divide controls related to airway, breathing, and circulation among others.

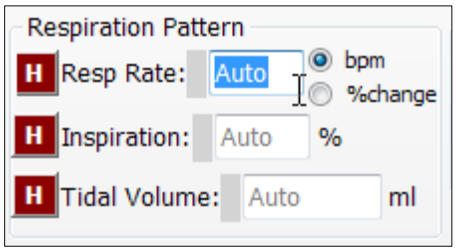



The **HOLD** and **Auto** buttons are **unique** to the automatic mode. Similar to manual mode, click an **apply** button to submit changes. Some changes are gradual and even the **NOW** apply button is pressed. The delay results from using a closed loop model that adjusts other related values over time, rather than displaying a unique value that is unrelated to other parameters.

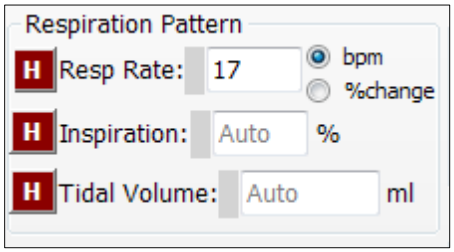
**HOLD:** Allows you to keep a current value constant. Recall, that in the manual mode, to keep a value constant, simply leave the control blank. Click on the **H** to change the option from Auto to **HOLD**.



**Auto:** Allow the model to auto-adjust the value. Click the **input field** blank to return to the default auto state.




**Manual:** Input the value of the parameter manually. The model automatically adjusts related physiological values.

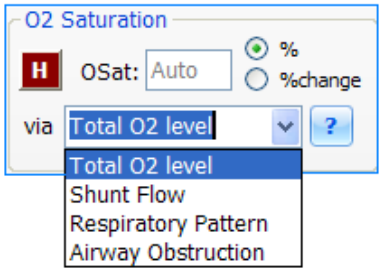



## AIRWAY/APPEARANCE/BREATHING TAB

The A-B vertical details tab includes the airway, appearance, and breathing controls.

Change the oxygen saturation by adjusting one of the following four parameters. Click on the "?" button to view a brief description of the four options.

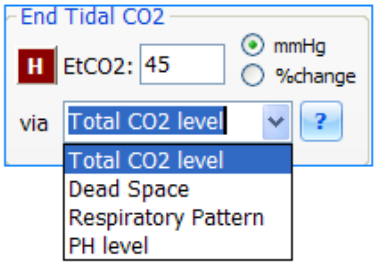
Options 2-4 take from 30 seconds to 3 minutes to change. Lower OSat settings will decrease the model's stability and put patient into crisis.




- Total $O_2$ level: oxygen reserve in the body.
- Shunt flow: the percentage of deoxygenated blood in pulmonary capillaries.
- Respiratory pattern Airway construction
- Airway obstruction

## ETCO2

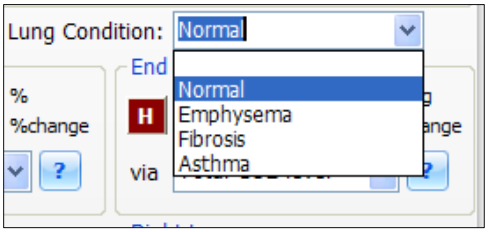
Similarly, EtCO2 can be changed by adjusting one of four parameters:




- Total $CO_2$ level: $CO_2$ build-up in the body;
- Dead Space: part of tidal volume that doesn't participate in gas exchange.
- Respiratory Pattern
- Ph level

## LUNG CONDITION

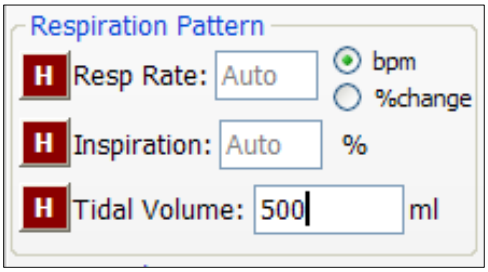
Change the condition and the model will automatically adjust the shunt flow, dead space, airway resistance, and respiratory pattern.




## TIDAL VOLUME

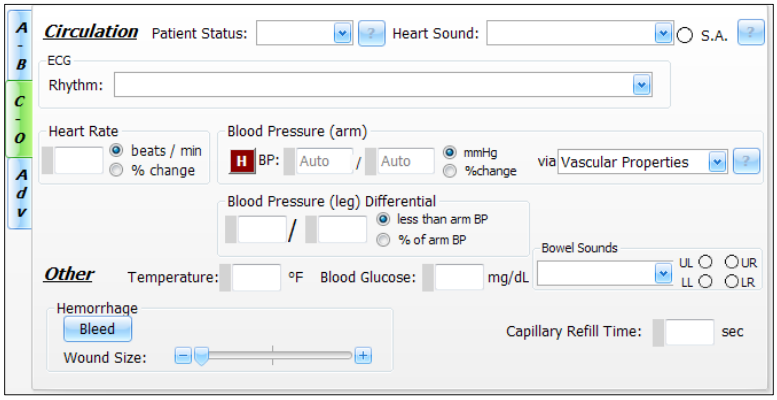
Adjust the tidal volume or amount of air breathed in or out during normal respiration. In the model, a tidal volume of 500 m/L is considered the normal level for an average adult build.

**If the respiratory rate goes to zero, the model does not restore it automatically. Always remember to specify a new respiratory rate.**




## CIRCULATION AND OTHER TAB

The C/O vertical details tab includes the circulation and breathing controls.




Each cardiac rhythm has a specific effect on the blood pressure wave forms. The pressure wave forms include ABP, CVP, PAWP and Pulse.

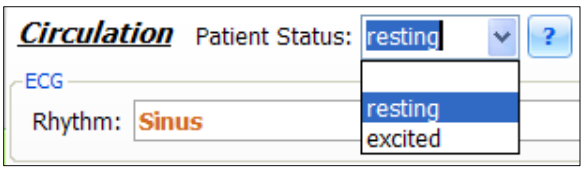
Mild cyanosis is activated when the oxygen saturation is less than 92% and/or the temperature is less than 35° C. Values under these thresholds will cause the cyanosis to get progressively worse.

Similar to $O_2$Sat and $EtCO_2$, blood pressure can be changed indirectly when using the modeling mode. You can do so by selecting one of four options.

- Vascular profiles: vessel diameter and vessel stiffness.
- Heart Rate
- LV Contractility
- Total Blood Volume

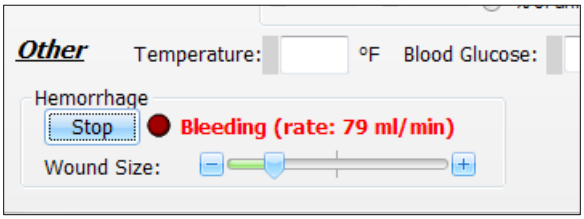
## PATIENT STATUS

Set the patient status to “Excited” (after exercise) to increases heart rate, temperature, respiratory rate, tidal volume, O2, CO2 diffusion capacity, metabolism rate, and CO2 formation rate. Set the status to “resting” for a normal state.

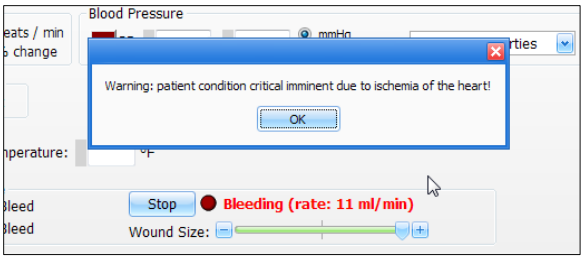



## BLEED AND WOUND SIZE

The Bleed and Wound size option allows the facilitator to simulate blood loss within the patient model. To start the virtual bleeding, click the “Bleed” button and adjust the bleeding rate using the “Wound Size” control.

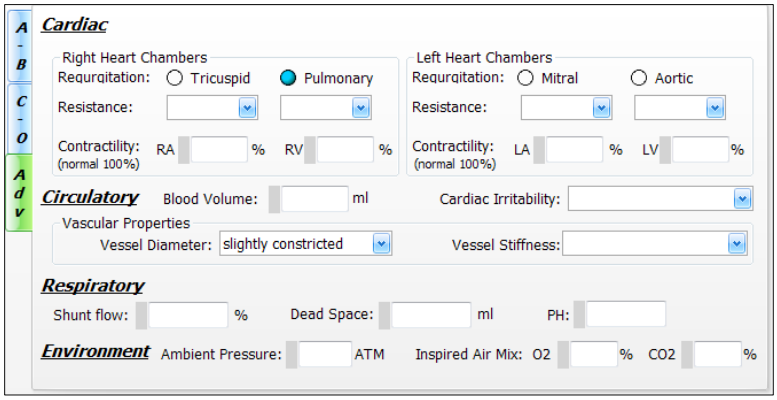



Once activated, the physiologic model gradually adjusts the simulator’s vital signs in response to the blood loss. Without intervention, the vital signs will gradually deteriorate until eventually, ischemia of the heart occurs. For information on how to infuse blood to the model virtually, go to page 55.



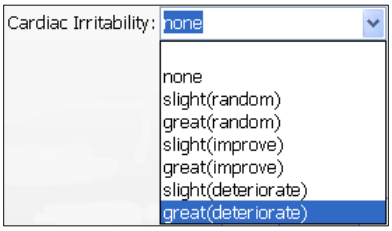
## ADVANCED TAB

The **Adv** vertical tab includes advanced cardiac, circulatory, respiratory and environment controls. All the controls in this page are **unique** to the automatic mode.

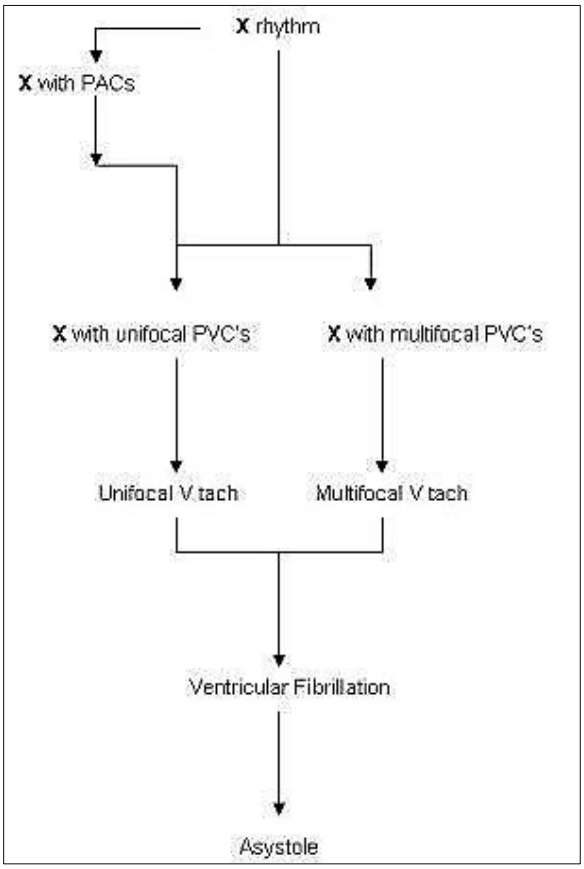



The advanced tab gives you more control over the model by allowing you to edit additional parameters that have an effect on the cardiovascular and respiratory systems. Use this page if you want to add complexity to a scenario or if you need to superimpose special conditions.

Cardiac irritability can be used to modify cardiac rhythms indirectly. You can improve (move towards normal sinus rhythm), or deteriorate (move towards ventricular fibrillation and asystole) any of the rhythms.



The progression of rhythms generally follows the pattern displayed in the figure below, where “X” represents normal sinus rhythm, multifocal atrial tachycardia, atrial flutter, atrial fibrillation, junctional rhythm, left or right bundle branch block, or atrio-ventricular block:

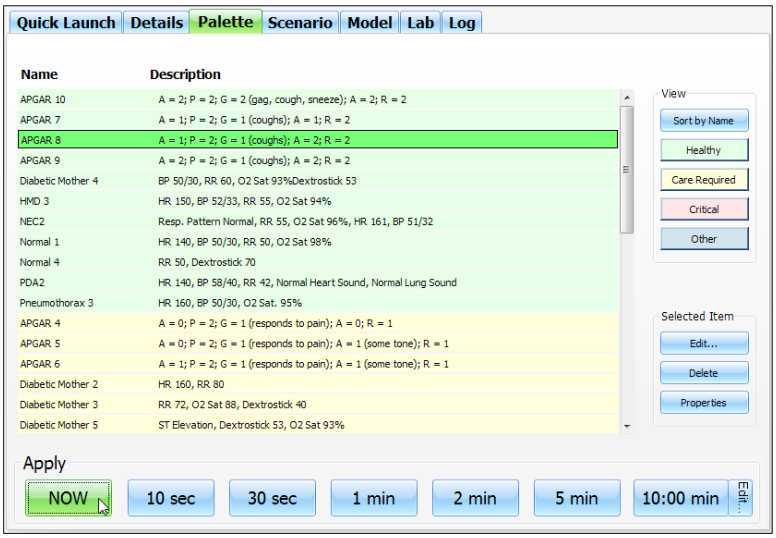


# Palette

Use the Palette tab to sort, manage, and edit the palette items in the current profile. Each profile stores an independent library of palette items.

To modify the vital sign parameters programmed into a palette, select a palette and click the Edit button. After the changes are made using the Details tab, click the “Save as Palette” Item button. For more information on customizing the Palette, see the Tips on Palette Item and Scenario Creation section of the appendix.

To apply a palette and change the simulator’s condition, select the palette item and click one of the “Apply” menu options.


Quick Launch
Details
Palette
Scenario
Model
Lab
Log
Name
Description
APGAR 10
A = 2; P = 2; G = 2 (gag, cough, sneeze); A = 2; R = 2
APGAR 7
A = 1; P = 2; G = 1 (coughs); A = 1; R = 2
APGAR 8
A = 1; P = 2; G = 1 (coughs); A = 2; R = 2
APGAR 9
A = 2; P = 2; G = 1 (coughs); A = 2; R = 2
Diabetic Mother 4
BP 50/30, RR 60, O2 Sat 93%Dextrostick 53
HMD 3
HR 150, BP 52/33, RR 55, O2 Sat 94%
NEC2
Resp. Pattern Normal, RR 55, O2 Sat 96%, HR 161, BP 51/32
Normal 1
HR 140, BP 50/30, RR 50, O2 Sat 98%
Normal 4
RR 50, Dextrostick 70
PDA2
HR 140, BP 58/40, RR 42, Normal Heart Sound, Normal Lung Sound
Pneumothorax 3
HR 160, BP 50/30, O2 Sat. 95%
APGAR 4
A = 0; P = 2; G = 1 (responds to pain); A = 0; R = 1
APGAR 5
A = 0; P = 2; G = 1 (responds to pain); A = 1 (some tone); R = 1
APGAR 6
A = 1; P = 2; G = 1 (responds to pain); A = 1 (some tone); R = 1
Diabetic Mother 2
HR 160, RR 80
Diabetic Mother 3
RR 72, O2 Sat 88, Dextrostick 40
Diabetic Mother 5
ST Elevation, Dextrostick 53, O2 Sat 93%
View
Sort by Name
Healthy
Care Required
Critical
Other
Selected Item
Edit...
Delete
Properties
Apply
NOW
10 sec
30 sec
1 min
2 min
5 min
10:00 min
Edit...

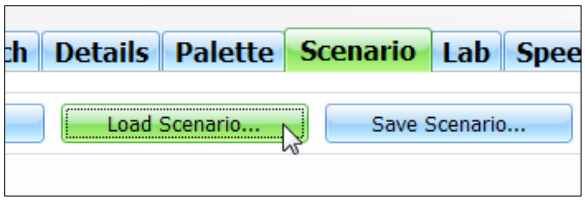
# Scenarios

The most advanced method of controlling Premie HAL is to build a scenario-- a sequence of Palette Items and delay periods played back in succession. Scenarios let the facilitator automate changes to the simulator's condition, so their attention can remain on the providers' actions. The scenario feature also standardizes the patient's presentation of symptoms. For fair assessment of providers and any research application, such standardization is key.

## PREPROGRAMMED LINEAR SCENARIOS

GaumardUI includes several preprogrammed scenarios to simulate variety of complications. All preprogrammed scenarios are included in the **Quick Start Profile**. To switch between profiles without exiting the software, click **FILE> Profile**. For this example **select** and load the **Quick Start Profile**.

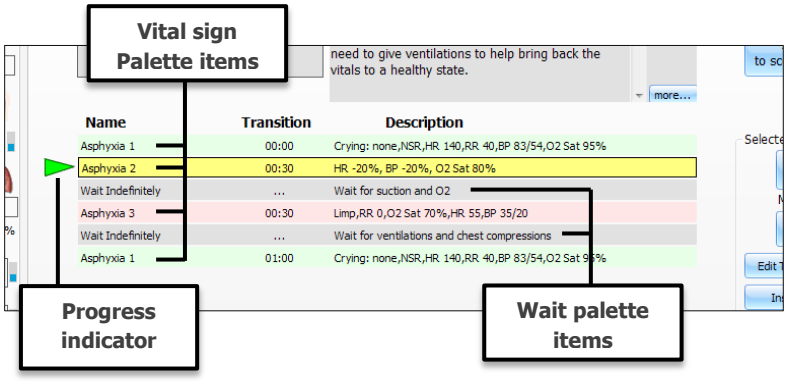
To use a preprogrammed scenario, go to the **Scenario** tab and click **Load Scenario**.




The Load Scenario dialog box appears. Select a scenario and click on **Load.** For a list of all the scenarios available, go to page 47.

## LINEAR SCENARIOS OVERVIEW

Linear scenarios are composed of **vital signs palette** items and **wait palette** items played in succession.



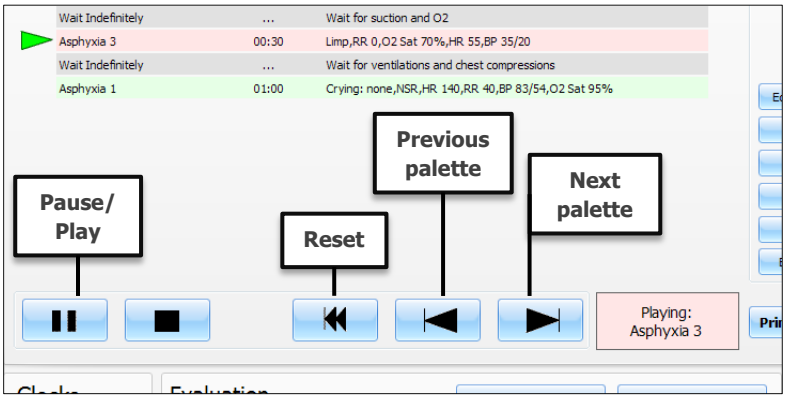

During the scenario, each vital signs palette updates the patient's condition. As outlined previously, palette items are created using the Details tab.

The transition time trends the increase or decrease of numerical vital signs such as blood pressure over seconds or minutes.

Wait palettes do not update or change vital signs. Instead, wait palettes give the provider time to perform an action; this may be treatment in response to a complication or performing a standard assessment.

## SCENARIO CONTROLS

Scenarios are controlled using the buttons at the bottom of the tab. The same way a music player plays songs, the scenario plays palette items. Intuitively, the facilitator can play, stop, pause, skip, or repeat items as necessary.


Wait Indefinitely ... Wait for suction and O2
Asphyxia 3 00:30 Limp,RR 0,O2 Sat 70%,HR 55,BP 35/20
Wait Indefinitely ... Wait for ventilations and chest compressions
Asphyxia 1 01:00 Crying: none,NSR,HR 140,RR 40,BP 83/54,O2 Sat 95%
Pause/ Play
Reset
Previous palette
Next palette
Playing: Asphyxia 3

## SCENARIO POSITION INDICATOR

An unfilled triangle means that the scenario is stopped. When the Play button is clicked, the item pointed by the indicator is be played.

A rapidly blinking triangle means that the scenario is playing the item to which the indicator is pointing.

A slowly blinking triangle means that the scenario is paused at the item to which the indicator is pointing.

## SCENARIO PLAYER CONTROLS

Start or play the item to which the scenario position indicator is pointing. This button has two states: play or pause.

Pauses the scenario. This state of the play button is only active when the scenario is playing. It is disabled when a 'Wait indefinitely' item is playing because in such case the scenario is already paused.

The stop button has 2 behaviors depending on when it is clicked. When clicked once, the Stop button halts the scenario at the end of the currently playing item. When clicked a second time, the scenario is stopped immediately. For example, if the currently playing item has a transition of 1:00 minute and the Stop button is pressed when it has 0:10 seconds left, the scenario will be halted at the end the transition (i.e., in 10 seconds). If the Stop button is clicked again within those remaining 10 seconds, the scenario stops immediately.

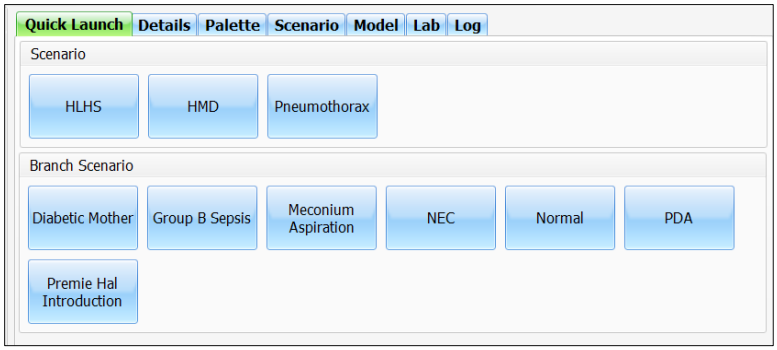
The next button advances the progress indicator to the next item on the scenario. Click next when a wait indefinitely palette is playing to proceed to the next palette.

Similar to the Next button, the Previous button returns the indicator to the previous item in the scenario.

The Reset button stops the scenario immediately and returns the indicator to the first item in the scenario.

## SCENARIO QUICK LAUNCH

Use the scenario quick launch window to start a scenario with a single click. The Quick Launch window displays all the scenarios saved in the current profile.




## CREATING A NEW LINEAR SCENARIO

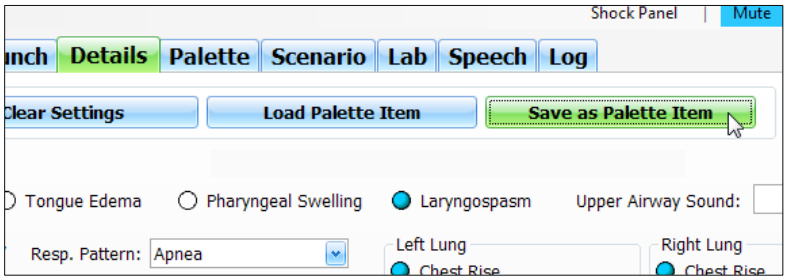
Build new scenarios to expand the number of exercises available in a training program. The general process of creating a new linear scenario is the following:

- Create a vital sign palette item for each state in the scenario
- Add the vital signs palettes and wait times to the scenario
- Play the scenario
- Modify and edit palettes
- Save the scenario

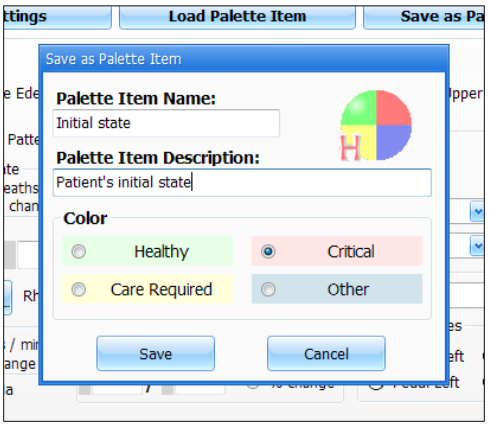
The first step is to create several vital sign palette items using the Details tab. Each palette item will represent a physiological state in the patient's condition during the scenario. Remember to program the vital signs for the target state; the transition time will handle trending the values.

It is recommended that the first vital signs palette includes instructions for all of the physiological parameters, sound types, and volumes. By specifying each parameter at the beginning of the scenario, you will ensure that no vital signs are inherited from a previous exercise.

Enter the vital signs for the first physiological state in the scenario and click the **Save as Palette Item** button.



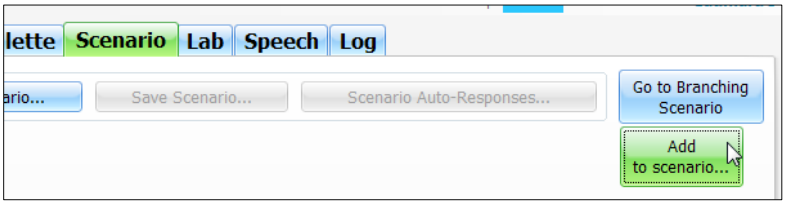
The Save as Palette Item dialog box is displayed. Type in the palette item name and a brief description; assign a color tag and click **Save**.



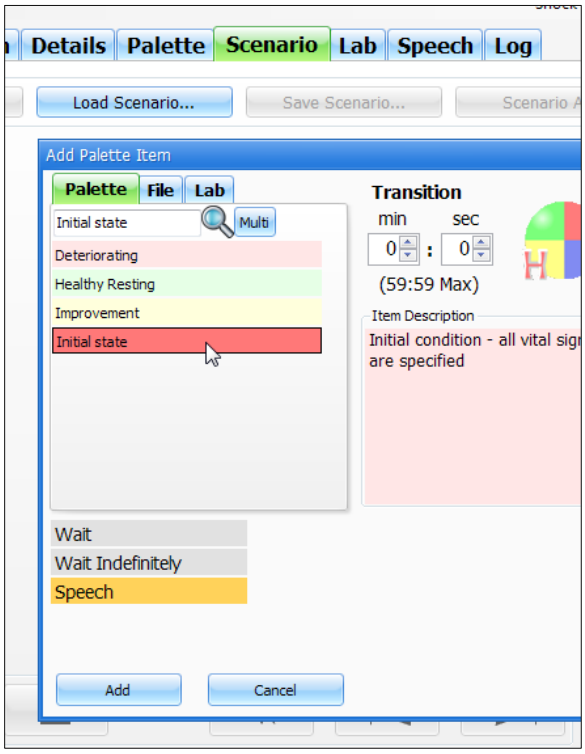

After the first palette is saved, create the next palette item by saving only those vital sign parameters that simulate the second stage in the patient's condition. Repeat this process to create palettes for the third and final stage in the scenario.

If you are creating scenarios for the automatic operating mode, recall that the physiologic model's calculations are based on accurate physiologic principles, and therefore, choosing a combination of vitals that are inconsistent with medical principles will not deliver desirable results.

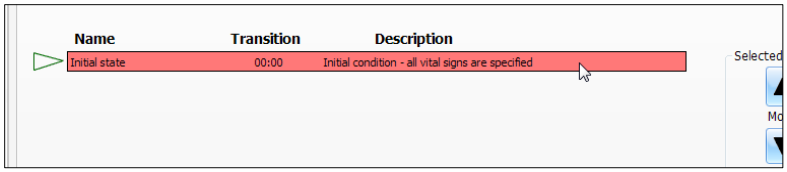
After all creating the vital sign palettes go to the **Scenario** tab and click **Add to Scenario**.



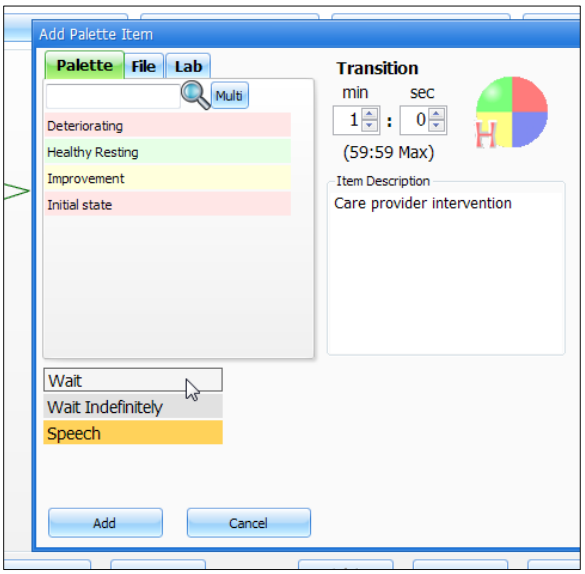
The Add Palette item menu is shown. Select the vital sign palette previously programmed to be first state in the scenario. Enter 0min 0sec for the transition time so the initial vital signs are applied immediately. Click **Add** to add the palette to the scenario.



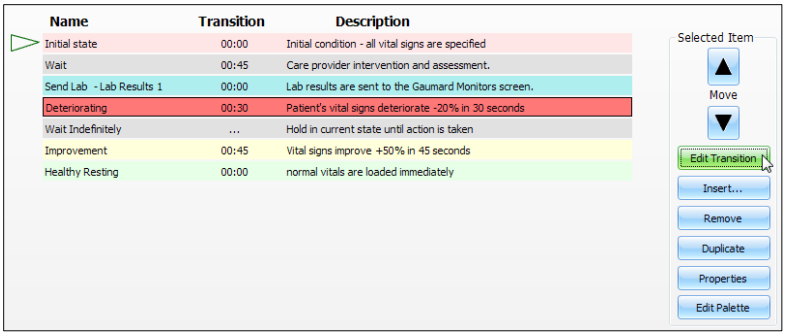

The first palette is now added. Click **Add Palette to Scenario**… again to add the following vital sign palettes and wait palette items.



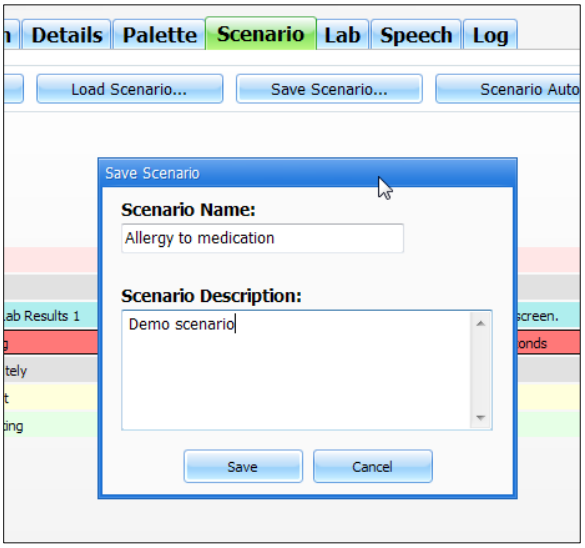
A Wait item holds the vital signs until the transition time expires. Alternatively, add a Wait Indefinitely palette to hold the vital signs until the facilitator manually advances to the next item using the scenario controls. Use wait palette items to give the care provider time to perform an assessment or action.




After the palettes are loaded, use the Selected Item menu to edit the scenario items.


Name
Transition
Description
Initial state 00:00 Initial condition - all vital signs are specified
Wait 00:45 Care provider intervention and assessment.
Send Lab - Lab Results 1 00:00 Lab results are sent to the Gaumard Monitors screen.
Deteriorating 00:30 Patient's vital signs deteriorate -20% in 30 seconds
Wait Indefinitely ... Hold in current state until action is taken
Improvement 00:45 Vital signs improve +50% in 45 seconds
Healthy Resting 00:00 normal vitals are loaded immediately
Selected Item
Move
Edit Transition
Insert...
Remove
Duplicate
Properties
Edit Palette

After the scenario is completed, click Save Scenario to store the scenario in the current profile for later use.



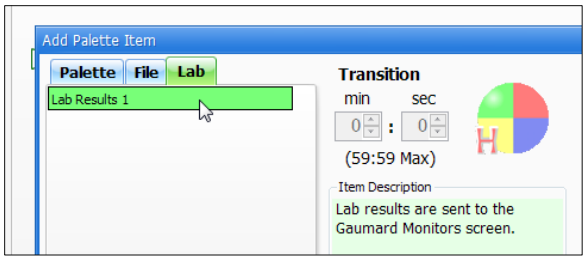
## ADDITIONAL SCENARIO FEATURES

Instructors can also incorporate the following features into a scenario for added realism.

- Auto responses – Automatically move onto the next palette item when electric therapy is detected.
- File sharing and lab reports – Send lab reports to the virtual monitor computer.

## FILE SHARING AND LAB REPORTS

The scenario can also automate the distribution of shared files and labs. Click on the "Add to scenario" button the select the File and Lab tabs to view the files available. For more information making files available for file sharing go to page 92 and to create a new lab report go to page 49.

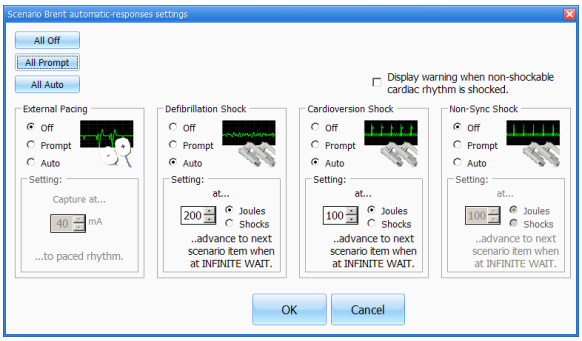



## AUTO RESPONSES

The scenario auto-response settings move the scenario to the next palette item when virtual electrical therapy is detected. Use the Virtual Shock panel to simulate electrical therapy intervention.

**Warning:** Do not defibrillate or pace Premie HAL with real medical equipment. Doing so will result in damage to the simulator's internal components.

**Auto-responses advance to the next palette if the virtual shock is applied while a "wait indefinitely" palette is being played and if the simulator's is in a shockable rhythm.**

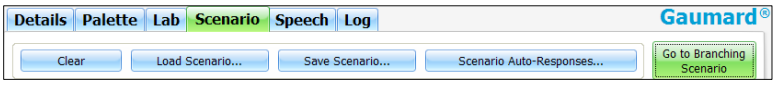



The three response options are defined below:

- Off - The scenario does not respond to the electric therapy.
- Prompt - The software detects the electrical therapy and prompts the facilitator if they would like to advance to the next palette.
- Auto – Automatically advance to the next palette only if the electrical therapy meets the threshold specified.

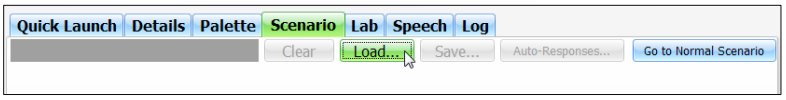
## BRANCHING SCENARIOS

Unlike linear scenarios, which progress from one palette to the next, the interactive branching scenario controls allow the facilitator to change the scenario's trajectory in response to provider actions. To access the Branching window, click the "Go to Branching Scenario" button on the Scenario tab.




## BRANCHING SCENARIO SCREEN

The top panel buttons are used to clear, load and save a scenario, or to switch from branching to linear scenarios. Click "Load Scenario" to access the preprogrammed branched scenarios in the Quick Start Profile.



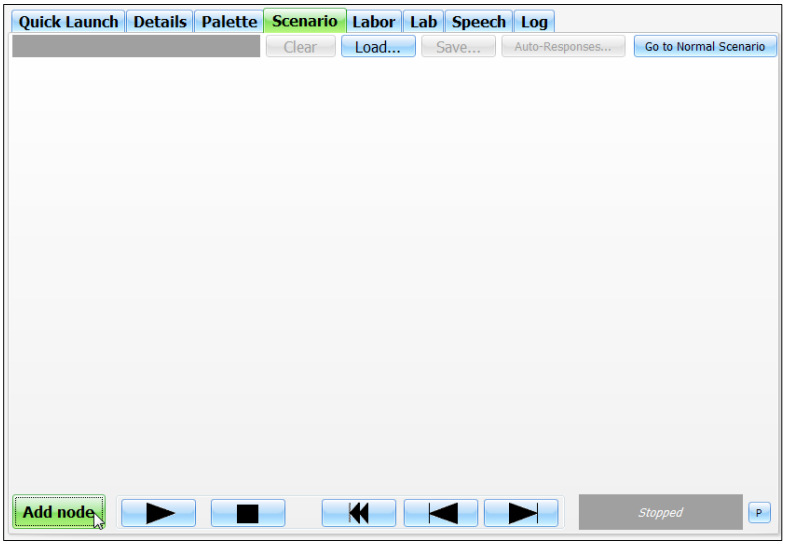

## CREATING A NEW BRANCHING SCENARIO

The basic process of creating a new branching scenario is the following:

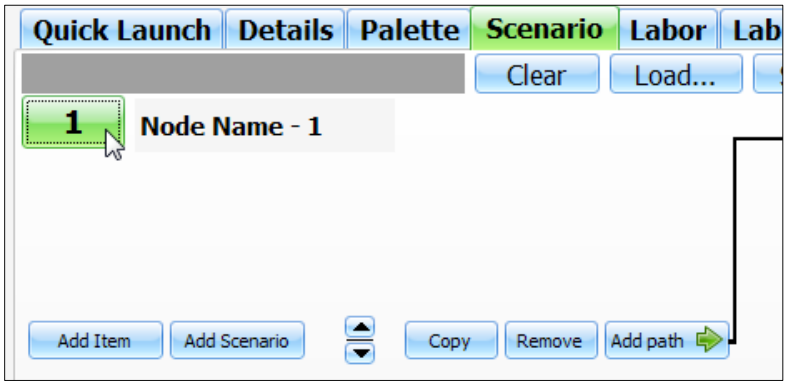
- Add nodes
- Add palettes or scenarios to each node
- Add paths to nodes that require provider action
- Create key events to alter the progress and trajectory of the nodes within the scenario

## ADDING NODES

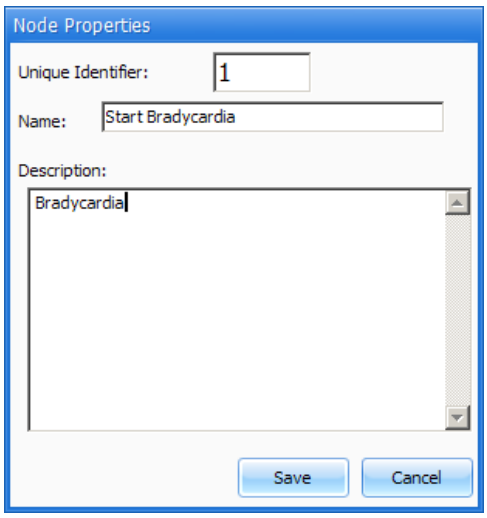
A branching scenario consists of several "Nodes". Each node is preconfigured to run a normal scenario or a series of palettes simulating a specific condition or effect. To add nodes, click the "Add node" button.



Click the node's identifier number to edit the node properties.

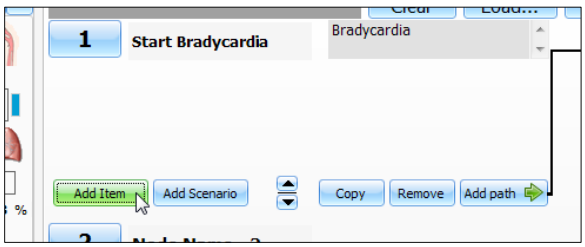



Enter a name for the node and description, then click "**Save".**




## ADDING PALETTES OR SCENARIOS TO A NODE

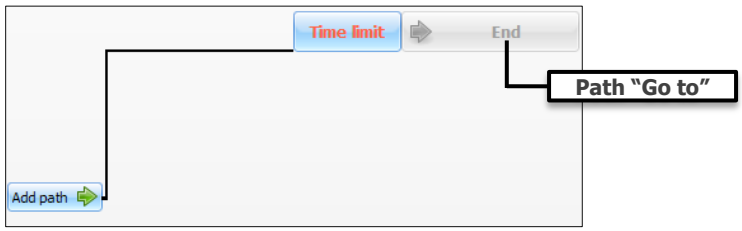
Click "Add Item" to add palette items or "Add Scenario" to add full scenarios to this node.



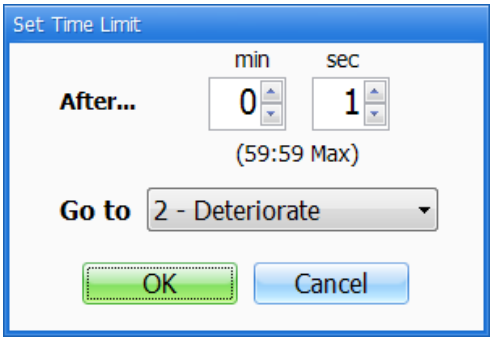

In this example, the following nodes are created: [1] Start Bradycardia, [2] Deteriorate, [3] Interventions, [4] Atropine, [5] Epinephrine, [6] Dopamine and [7] Pace. Each node is programmed with palettes that simulate the effect described.

## ADDING PATHS

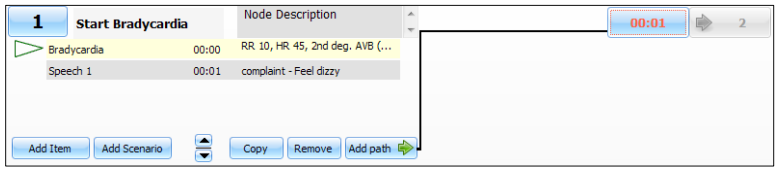
A path refers to the trajectory from one node to another after the last palette in a node expires. Click on the “Time Limit” icon to modify the “Go To” point for the default path.




Configure the countdown timer and the “go to” point for the default path. Click “OK” to save.

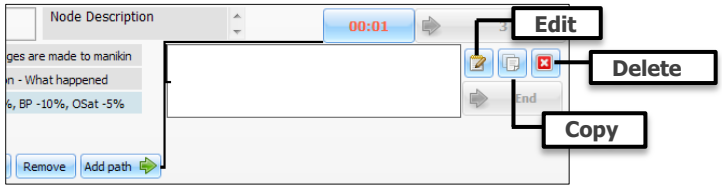



After the last palette expires, the scenario will move on to the node as indicated by the arrow. Node 1 is now configured to continue to Node 2 as indicated by the path’s time limit.

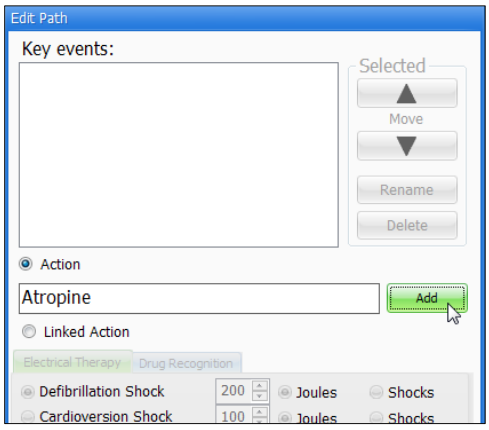



## KEY EVENTS

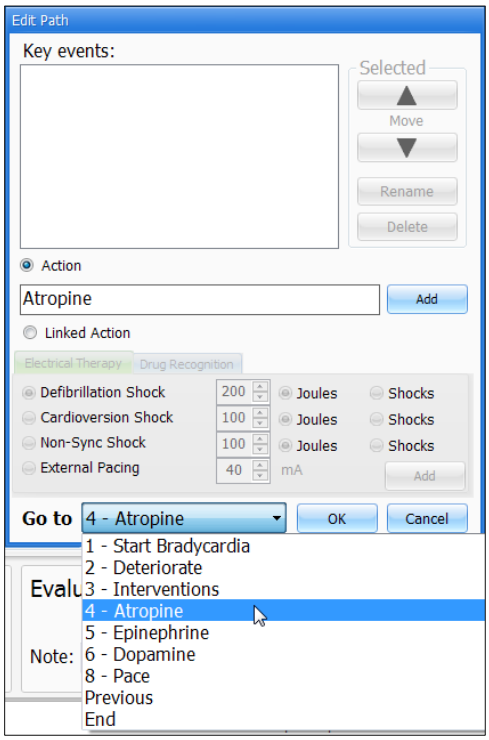
Key events allow the facilitator to select from multiple paths within a node to alter the trajectory of the scenario. To add a key event to a node, first click the “Add path” button to add an alternate path, and then click the key event “Edit” button.



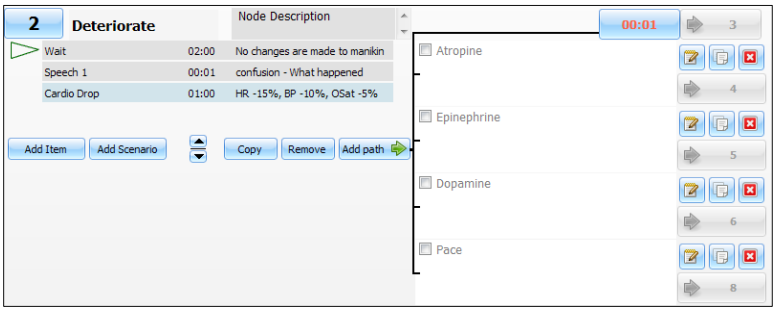
Use the Edit Path window to name, sort and create key events. First, type a name for the action, and then click “Add”.



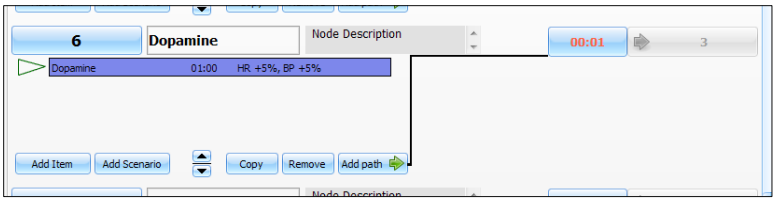

After the action is added to the Key Events list, assign the node that this action will move the scenario to using the “Go to” menu. Click “OK” to save changes.



In the example below, node 2 is configured with four alternate paths. Once the provider performs any one of the actions listed as key events, the facilitator will checkmark the key event to alter the trajectory of the node sequence.




If the provider administers Dopamine, the facilitator checkmarks the Dopamine key event to progress the scenario to node 6. Node 6 is programmed with the effects of the medication.




## SAMPLE BRANCH SCENARIO DIAGRAM

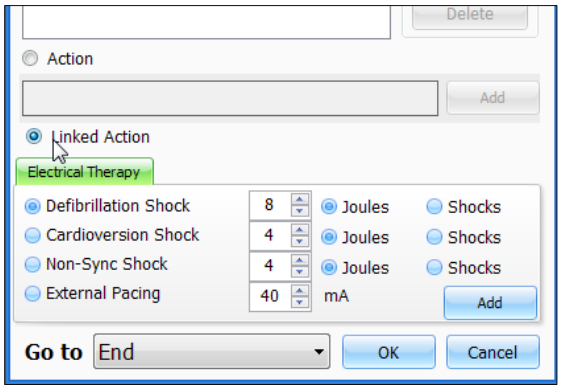
| Node | Node Name | Description |
|---|---|---|
| **1** | Start bradycardia | Node vital signs palettes simulate bradycardia. Go to node 2. |
| **2** | Deteriorate | Vital signs palettes deteriorate the patient's condition by -15%.<br>Care provider has 4 options. Each option (key event) moves the scenario to the node specified. If no action is taken, the scenario will move to node 3 at the end of the time limit. |
| | | **Key event** |
| | | Atropine **Node 4** \| Epinephrine **Node 5** \| Dopamine **Node 6** \| Pace **Node 7** |
| **3** | Intervention | Wait indefinitely, vital signs are on hold. Provider is to intervene again. |
| | | **Key event** |
| | | Atropine **Node 4** \| Epinephrine **Node 5** \| Dopamine **Node 6** \| Pace **Node 7** |
| **4** | Atropine | Node vital signs palettes simulate the response to atropine. **Time limit:** Go to node 3 after 1 minute. |
| **5** | Epinephrine | Node vital signs palettes simulate the response to epinephrine. **Time limit:** Go to node 3 after 1 minute. |
| **6** | Dopamine | Node vital signs palettes simulate the response to dopamine. **Time limit:** Go to node 3 after 1 minute. |
| **7** | Pace | Vital signs simulate the effect of pacing. Scenario ends. |

## LINKED ACTIONS

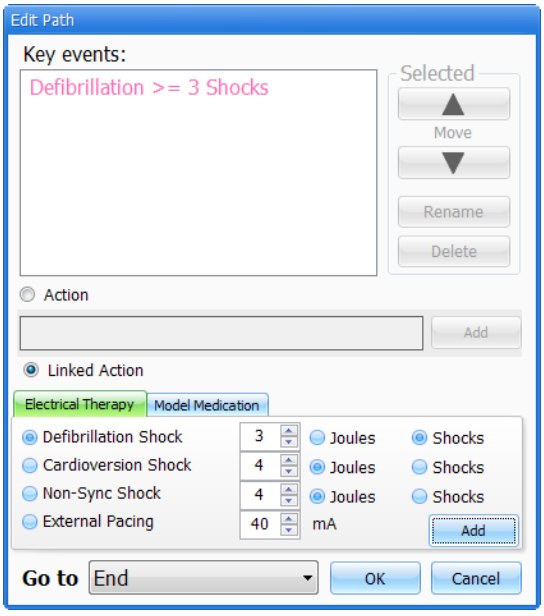
A Linked action automatically triggers a key event when virtual electrical therapy is detected. To add a linked action, first open the Edit Path window.

Click the Linked Action radio button and select from Defibrillation Shock, Cardioversion Shock, Non-Sync Shock or External Pacing. Then, set the parameters for response to either joules or number of shocks.

Specify the “Go To” node the linked action will move the scenario to and click “Add” to insert the electrical therapy into the Key Events list. Click OK to save the changes.

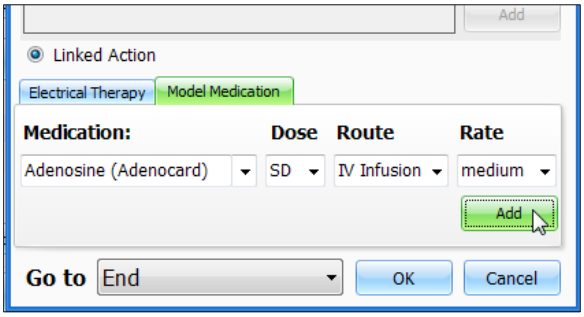



Specify the Go To node the linked action will move the scenario to and click the Add to insert the electrical therapy into the Key Events. Click OK to save the changes. To apply electrical therapy, use the virtual shock panel.

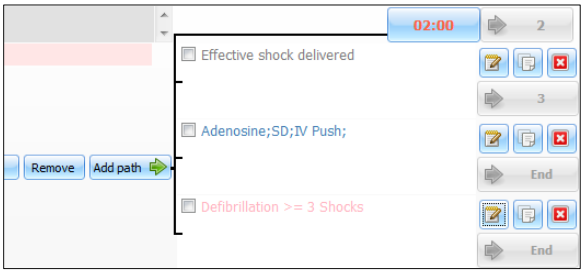


## MODEL MEDICATION

In Automatic Mode, use the model medication tab add medications from the Drugs list to the branching scenario. Similarly, to the Electrical Therapy entries, the Model Medication is added via Edit Path, Linked Action. Select from a list of medications, dose, and routes; click Add to list in the Key events window, then OK to add to the path itself.




Node 1 of a Cardiac Arrest branching scenario with Model Medication and Electrical Therapy paths added. Model Medication events use blue text in the node display.



## FACTORY PRESET SCENARIOS - MANUAL MODE

These scenarios in the manual mode are found in the Quick Start Premie profile. There are three linear scenarios and six branching scenarios. All shown are for a premature infant patient.

| Scenario Name | Scenario Description |
|---|---|
| | |
| | **Linear** |
| **HLHS** | A 32 week premie remains cyanotic despite breathing |
| **HMD** | A teenage mother who received no prenatal care delivered a 1300g infant in L/D |
| **Pneumothorax** | Infant delivered at 32 weeks had no respiratory effort at birth. The baby required intubation and is now on a ventilator set at 40 bpm. The mother received regular prenatal care and was given two doses of antenatal steroids prior to delivery |
| | **Branching** |
| **Diabetic Mother** | A thirty two week infant is born to a 23 year old insulin dependent mother who was diagnosed at age 21. She is classified as Type B and has been followed in the high risk clinic. Suction and stimulation have already been applied. |
| **Group B Sepsis** | A mother with no prenatal care delivers a premature baby with foul smelling amniotic fluid in the emergency room. The baby is being bagged with $O_2$. |
| **Meconium Aspiration** | 31 week infant delivered with thick meconium staining. Baby is not breathing and meconium aspiration is suspected with possible pneumonia |
| **NEC** | A two week old premature infant began enteral feeds a week ago. He required some resuscitation at birth for perinatal asphyxia and received antibiotics for possible sepsis. His nurse reports increasing gastric residuals and a few episodes of apnea and increasing abdominal girths. |
| **Normal** | A mother is admitted to the hospital for preterm labor. She has had good prenatal care and her dates show the infant to be approximately 32 weeks. She received two doses of antenatal steroids, her membranes are intact and the baby's L/S ratio is 1.9:1. She continues to labor and the baby's scalp pH is 7.5. Despite attempts to delay delivery she delivers a 1300g infant. After suctioning and gentle stimulation, the baby begins to cry. |
| **PDA** | On the second day of life, a premie who has had a good response to surfactant and ventilation develops deteriorating vital signs. |

## FACTORY PRESET SCENARIOS - AUTOMATIC MODE

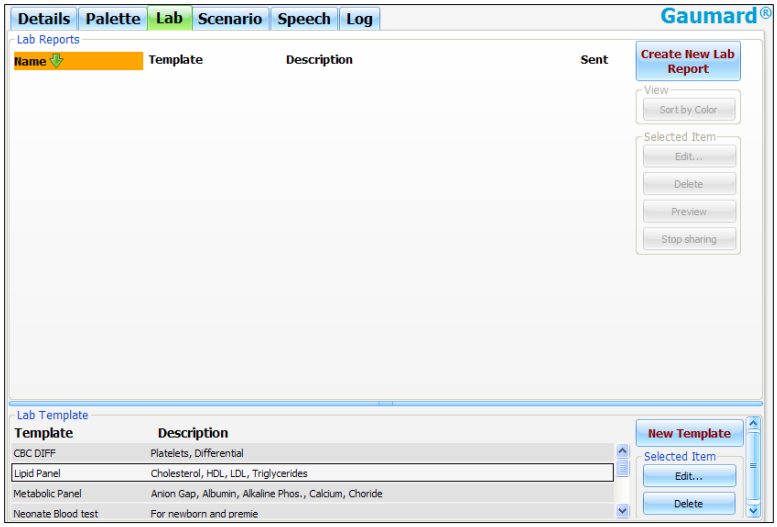
The scenarios in the Automatic mode are found in the Quick Start Premie Modeling profile. There are eight linear scenarios and one branching scenario. All shown are for a premature infant patient.

| Scenario Name | Scenario Description |
|---|---|
| | |
| **Linear** | |
| **Variations A** | |
| **Uterine Rupture A** | |
| **Shoulder Dystocia A** | |
| **Preeclampsia A** | |
| **Healthy Baby B** | Baby was delivered SVD and is fairly vigorous. |
| **Healthy Baby A** | Baby is vigorous and earns good APGARS. |
| **Faye Baby** | |
| **Embolism Baby A** | |
| **Branching** | |
| **Variations Branching** | |

To view a flowchart of the scenario information, go to page 108.

# Lab

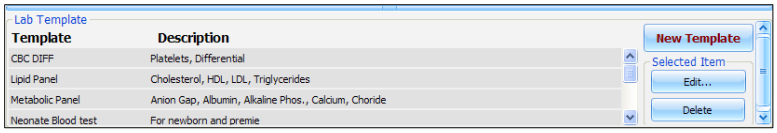
Laboratory tests are helpful tools for evaluating the health of a patient. To simulate this process, the Lab tab allows the facilitator to create laboratory tests to aid the provider during simulation. Any number of custom templates can be created to supplement many types of scenarios. In addition, the facilitator is in control of the results of each test. Once a laboratory test is prepared, the facilitator can send the results to the virtual monitor computer for the provider access during the exercise.



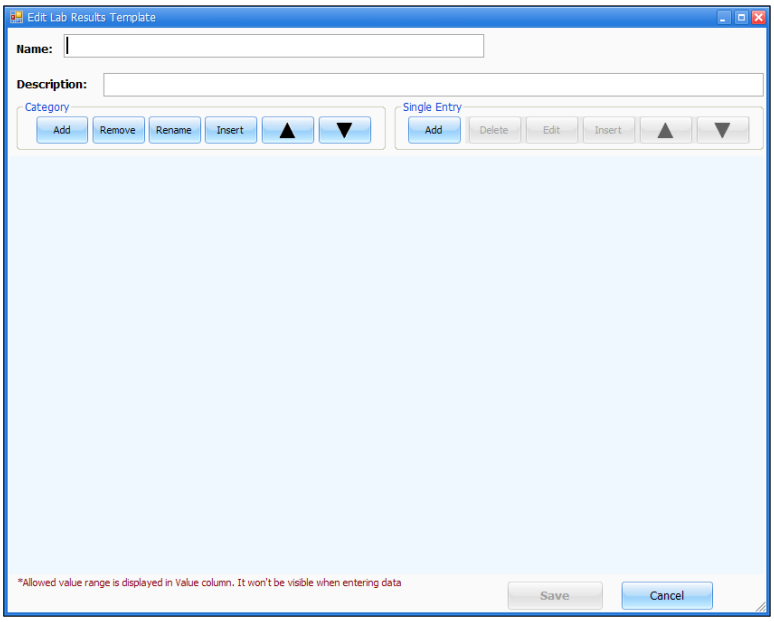

The Gaumard Virtual monitors must be connected before using the file sharing feature. To verify the connection, go to page 95.

## CREATING A LAB TEMPLATE

To begin, navigate to the bottom of the tab and click on the **New Template** button on the right panel.

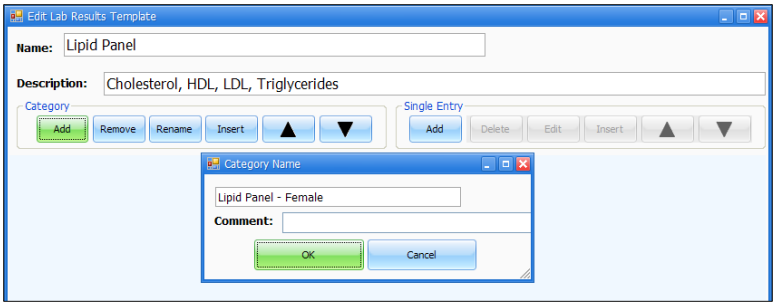


The **Edit Lab Results Template** window is used to create templates that will be later used to create lab reports.



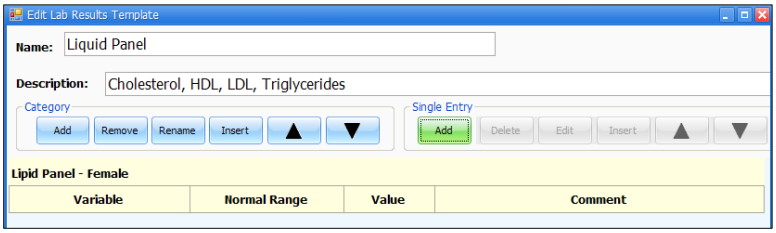

Enter a **name** for the lab template followed by a **description**.

Categories are used to group a series of tests in a lab report. From the “category” box, click **Add** to name and create a category.

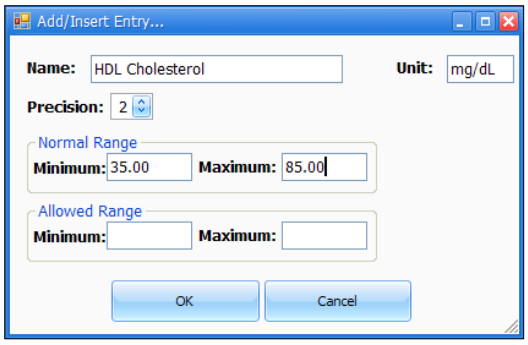



Then, click **OK** to save the new category.

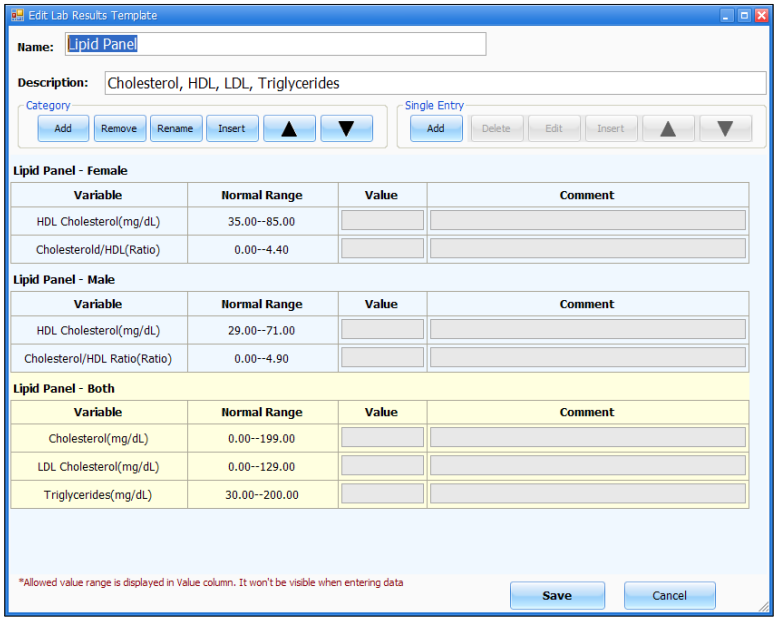
Use the **Single Entry** menu to add a test under the category previously created.



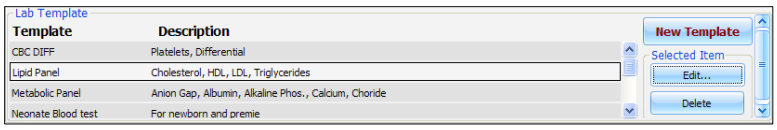
Use the **Add/Edit Entry** menu to customize the different parameters on a specific test. Begin by providing the name of the test, unit and decimal precision. The **Normal Range** will be displayed on the lab report for the provider to use as guide while reading the results. Meanwhile, the **Allowed Range** restricts the minimum and maximum value a facilitator can input as a test result. Once the test entry is configured, click **OK** to add the new test.




Repeat the process to add more tests and categories using the Category and Single Entry menu. Please note that individual items can be moved, deleted or modified after they are created. Click the “Save” button to create the new lab template.

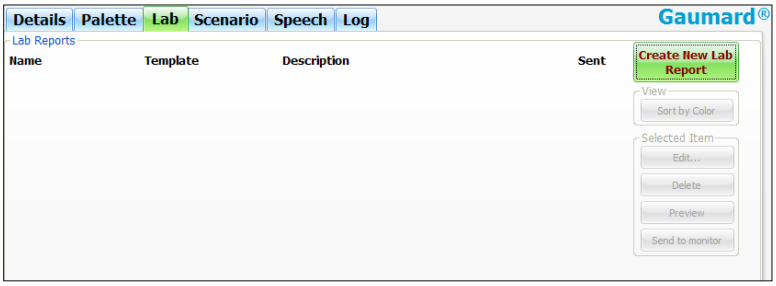



Once a new format is created, it is listed on the “Lab Template” section at the bottom of the Lab tab. Use the buttons on the left panel to edit or delete lab templates.

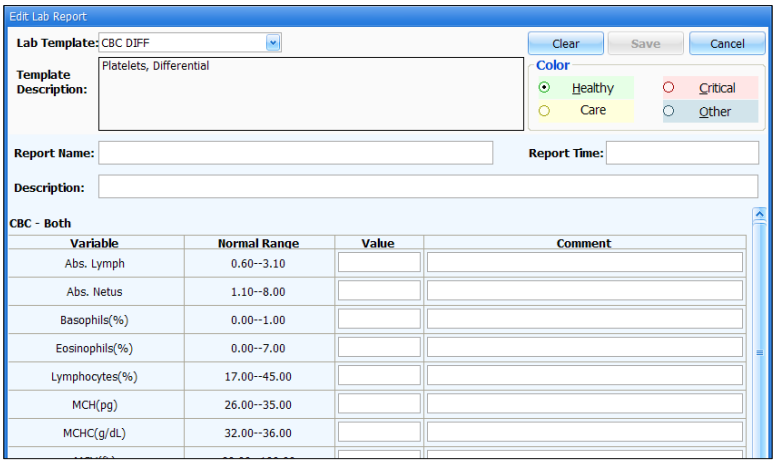


## CREATING A LAB REPORT

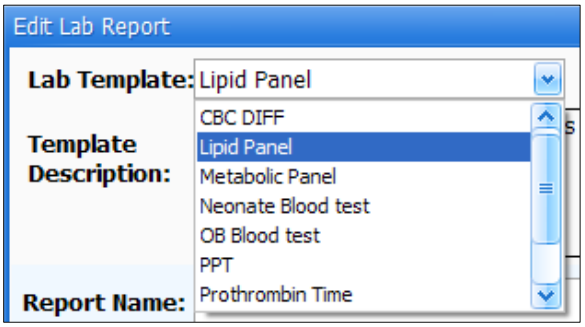
To begin, click on **Create a New Lab Report** from the right panel.



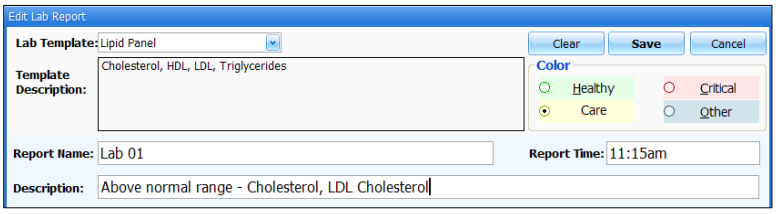

The **Edit Lab Report** window is used to prepare new lab report.



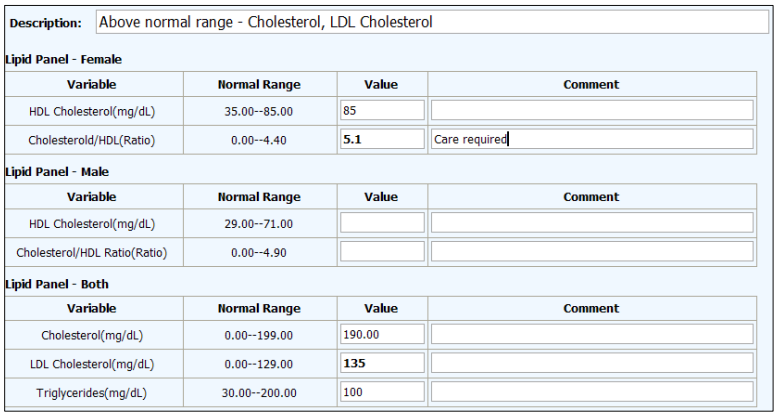

First, select a **Lab Template** from the drop down menu.




Provide a **Report Name**, **Report Time** and **Description**. In addition, select a condition color tag for the lab report on the right panel. Color tags aid the sorting of lab reports on the report list window.



Input the results of the tests on the **Value** column. Values above the normal range specified will be displayed in bold. Include any comments associated with the test performed. Finally, click **Save** from the top right menu to create the lab report.



**Description:** Above normal range - Cholesterol, LDL Cholesterol

**Lipid Panel - Female**

| Variable | Normal Range | Value | Comment |
|---|---|---|---|
| HDL Cholesterol(mg/dL) | 35.00--85.00 | 85 | |
| Cholesterol/HDL(Ratio) | 0.00--4.40 | **5.1** | Care required |

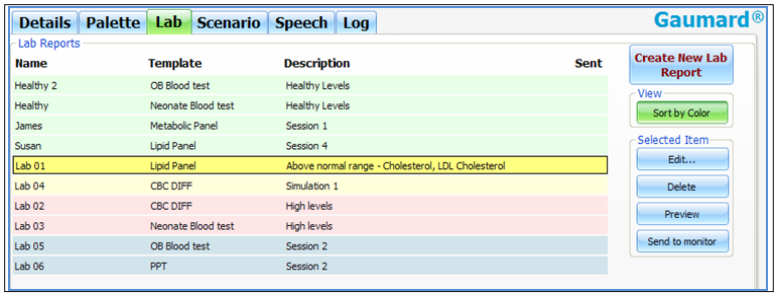
**Lipid Panel - Male**

| Variable | Normal Range | Value | Comment |
|---|---|---|---|
| HDL Cholesterol(mg/dL) | 29.00--71.00 | | |
| Cholesterol/HDL Ratio(Ratio) | 0.00--4.90 | | |

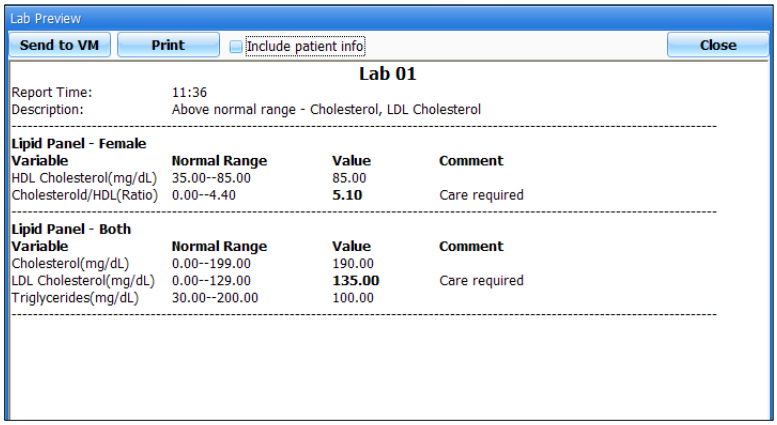
**Lipid Panel - Both**

| Variable | Normal Range | Value | Comment |
|---|---|---|---|
| Cholesterol(mg/dL) | 0.00--199.00 | 190.00 | |
| LDL Cholesterol(mg/dL) | 0.00--129.00 | **135** | |
| Triglycerides(mg/dL) | 30.00--200.00 | 100 | |

The newly created lab report is now listed in the “Lab Reports” section. Sort lab reports by name, template, description, or color tag.




On the right panel, click “Preview” to view final lab report on the facilitator’s screen. To make the lab report available to the provider on the patient monitor screen, click “Send to VM”.



Lab Preview

Send to VM | Print | Include patient info | Close

**Lab 01**

Report Time: 11:36
Description: Above normal range - Cholesterol, LDL Cholesterol

**Lipid Panel - Female**

| Variable | Normal Range | Value | Comment |
|---|---|---|---|
| HDL Cholesterol(mg/dL) | 35.00--85.00 | 85.00 | |
| Cholesterol/HDL(Ratio) | 0.00--4.40 | **5.10** | Care required |

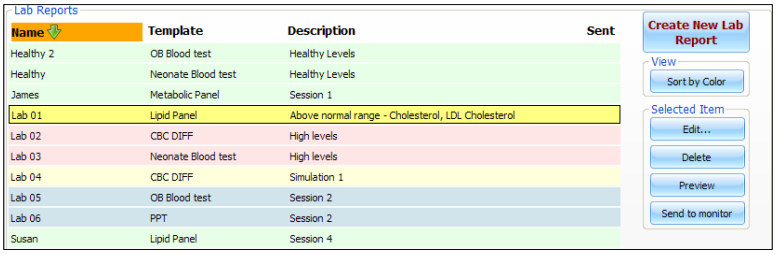
**Lipid Panel - Both**

| Variable | Normal Range | Value | Comment |
|---|---|---|---|
| Cholesterol(mg/dL) | 0.00--199.00 | 190.00 | |
| LDL Cholesterol(mg/dL) | 0.00--129.00 | **135.00** | Care required |
| Triglycerides(mg/dL) | 30.00--200.00 | 100.00 | |

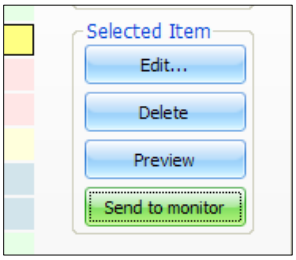
The preview window also allows the printing of results for distribution and archiving.

## SEND TO MONITOR

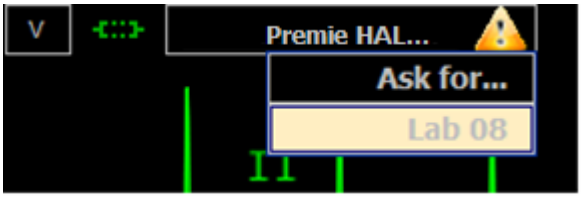
Send the completed lab report to the virtual monitor screen to assist the care provider. Begin by selecting the report from the lab reports list.



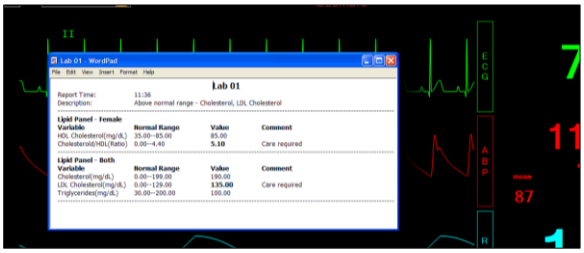

Click the **Send to Monitor** button to transfer the lab report to the virtual monitor.



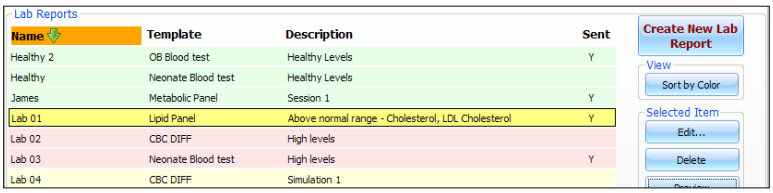

On the virtual monitor window, an exclamation icon notifies the provider a file is ready for access. Click the patient monitor drop down menu to select the available lab report.




The lab report will open using the system's default application.




Once the report is sent, the letter Y will be present on the Sent column. Use the Stop Sharing button on the right panel to remove any items on the virtual monitors file list.




An editable copy of the lab report is also copied onto the Gaumard_UI folder on the laptop's home screen. For information on how to access other files from the Gaumard Monitor screen, go to page 92.

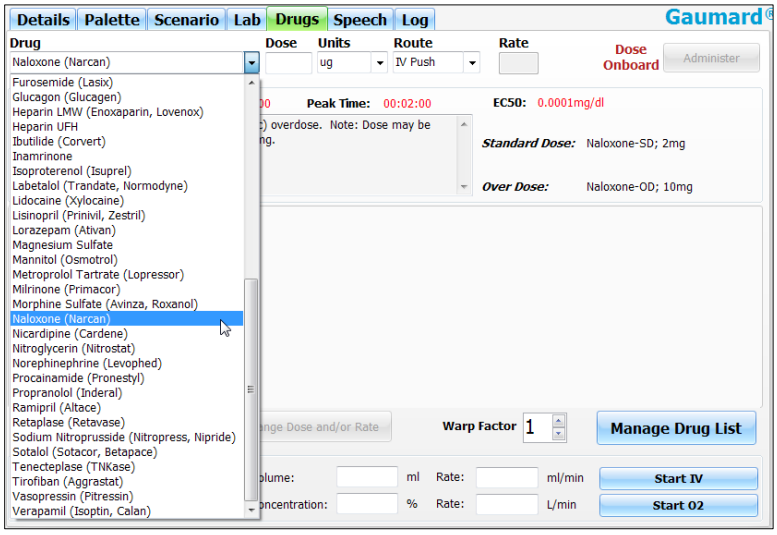
# Drugs (Automatic Mode Only)

The drug tab is available only in automatic operating mode. It is used by facilitators to simulate the physiological effects and reactions of medications administered to the patient model. The physiologic model processes the drug's properties, dosage, administration time and interactions then adjusts the patient model vital signs accordingly.

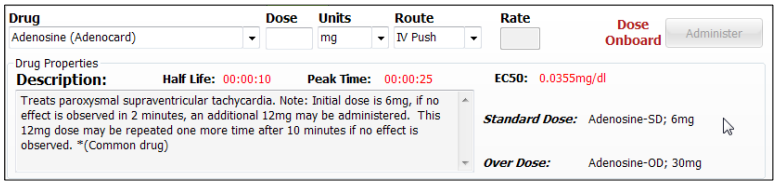
While operating in the automatic mode, select the Meds Profile to load the library of preprogrammed drugs. The built in drug editor allows facilitators to stay current with new medications or make changes to the properties of existing drugs. All of the preprogrammed drugs included in the library are found in the 2008 Handbook of Emergency Cardiovascular Care published by the American Heart Association.

## ADMINISTERING MEDICATIONS

Follow the steps below to administer a medication directly from the medication tab. Begin by selecting a medication from the drug list.

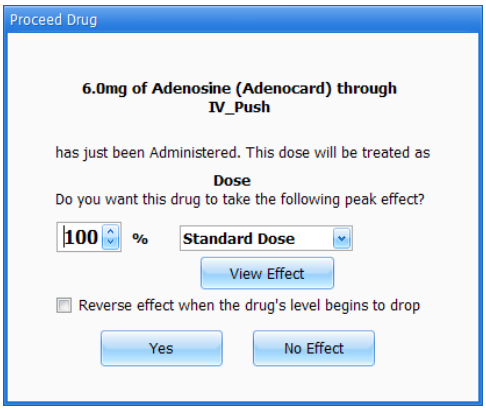



A brief description is displayed at the top of the window. The half-life, peak time and drug concentration are listed in addition to the standard and over dose dosages.

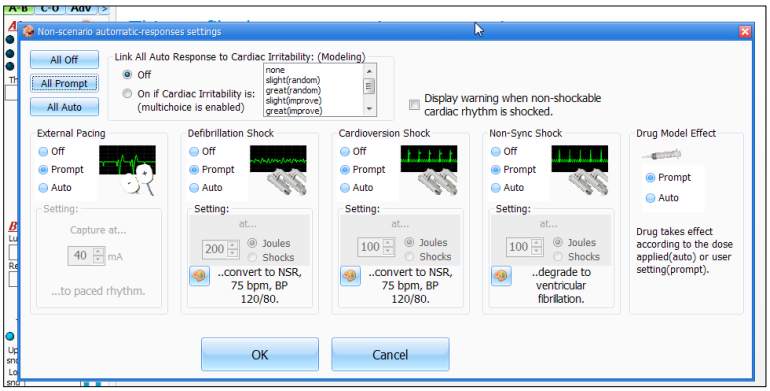

Drug
Dose
Units
Route
Rate
Adenosine (Adenocard)
mg
IV Push
Dose Onboard
Administer
Drug Properties
Description:
Half Life: 00:00:10
Peak Time: 00:00:25
EC50: 0.0355mg/dl
Treats paroxysmal supraventricular tachycardia. Note: Initial dose is 6mg, if no effect is observed in 2 minutes, an additional 12mg may be administered. This 12mg dose may be repeated one more time after 10 minutes if no effect is observed. *(Common drug)
Standard Dose: Adenosine-SD; 6mg
Over Dose: Adenosine-OD; 30mg

Enter the dose, units, route and rate (if applicable), and click the **Administer** button.

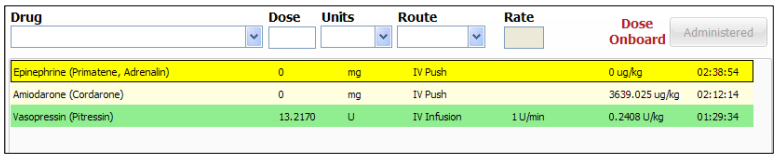
By default, the Proceed Drug window prompts the facilitator to confirm dosage effects before applying them. Adjust the peak effect percentage and/or the dosage effect. Click Yes to begin administering the drug.


Proceed Drug
6.0mg of Adenosine (Adenocard) through IV_Push
has just been Administered. This dose will be treated as
Dose
Do you want this drug to take the following peak effect?
100
%
Standard Dose
View Effect
Reverse effect when the drug's level begins to drop
Yes
No Effect

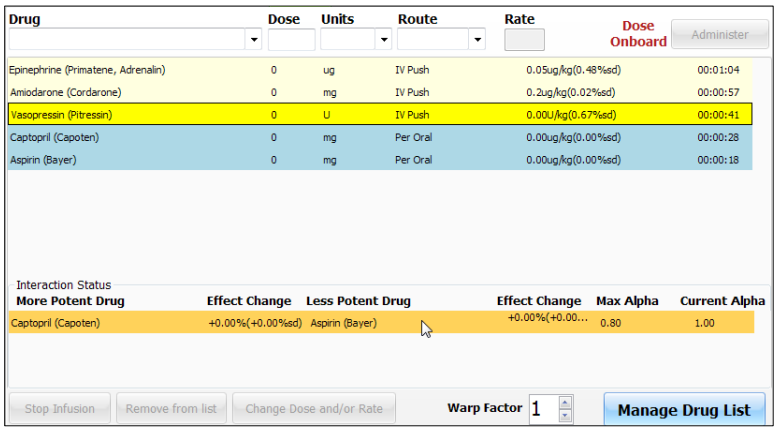
To turn off the Proceed Drug prompt, go to the menu bar and click Setup>Auto Responses then change Drug Model Effect to Auto.



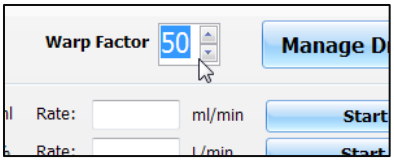
The administered drug panel displays information on dosage rate, percentage of dose completed and total time of administration.




In addition, if a drug interaction is detected, information about the effect and the interactor is displayed in the interaction status panel.

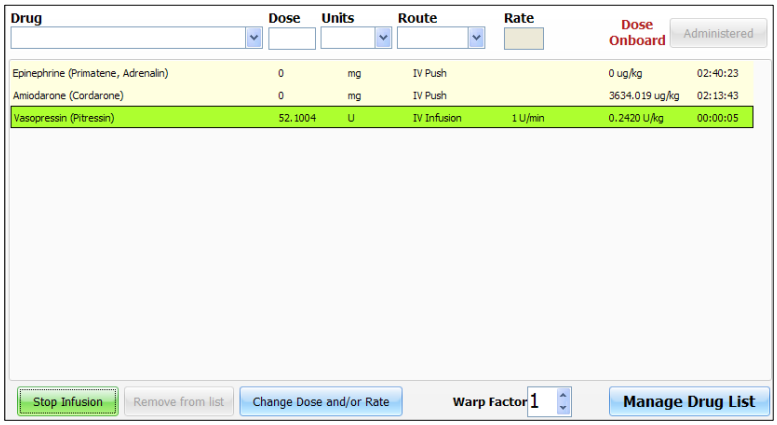



Increase the warp factor to speed up the effect of a medication on the patient model.

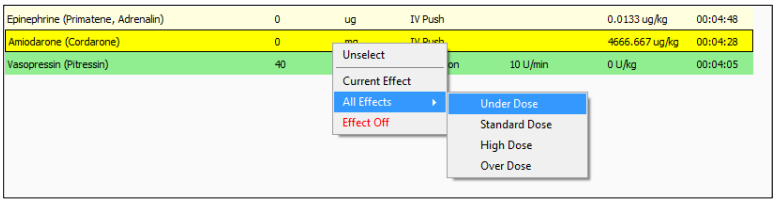



After the drug's administration is complete, select the drug and click **Remove from list**. Drugs cannot be removed from the list during the administration process with the exception of IV infusions. However, the drug effects for each medication can be turned off. To remove all the drugs from the list and reset the patient model, click **File** and **New Session**.

Click **Stop Infusion** to pause the drug's administration. During this state, the IV infusion dose and/or rate can be adjusted or removed altogether if necessary.



Right click on the drug entry to show the drug effect menu.




Select from the following options.

**Unselect** - Unselect a highlighted drug.

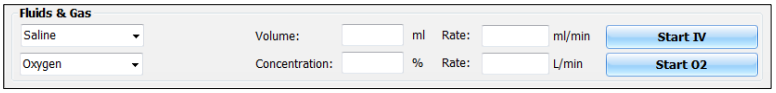
**Current Effects** - View the effect on the patient's vital signs.

**All effects -** View all the available programmed drug effects for this medication.

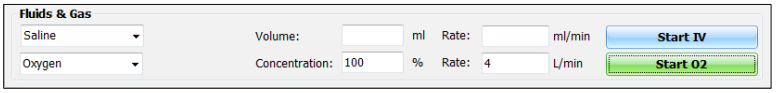
**Drug effect toggle** -Turn the drug effect off/on.

## FLUID & GAS

Controls for fluids and gas administration are found at the bottom of the Drugs page. Two fluids can be administered, saline or blood.

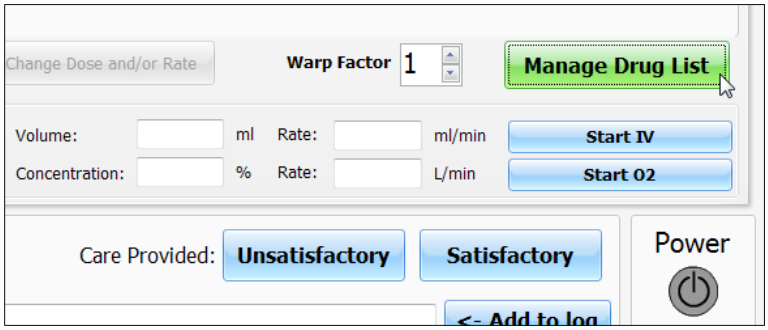



To apply any of these options, including oxygen, select the desired choice and specify the volume or concentration and the rate. Then click on **Start IV** or **Start O2**. You can pause the administration at any time by clicking **Stop**.

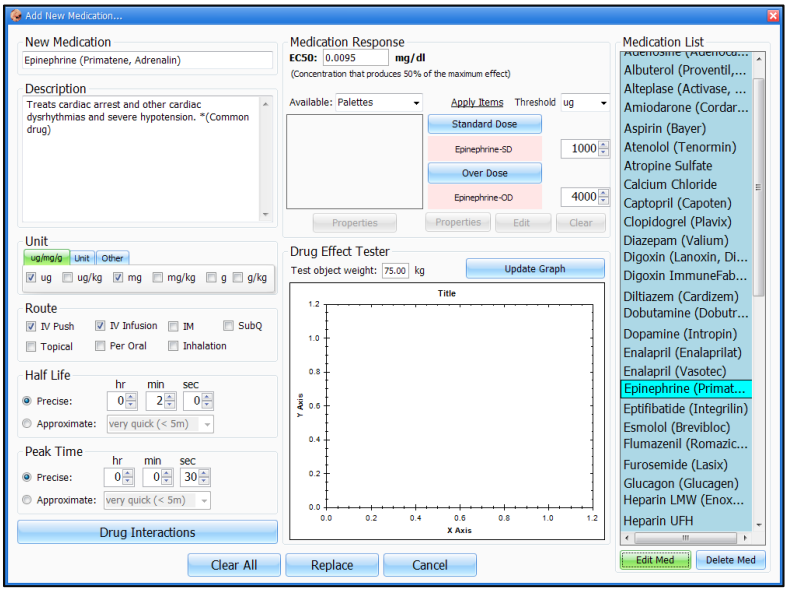


## DRUG LIST MANAGER

To add new drugs, edit or update existing items and program drug interactions, click the **Manage Drug List** button.

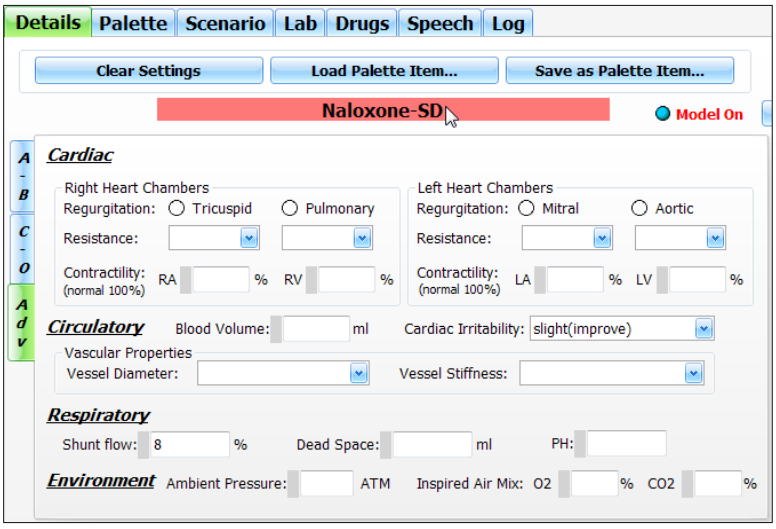



Select a drug from the Medication List and click edit to view the medication's properties.

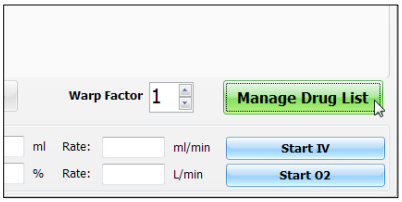


## ADDING NEW DRUGS

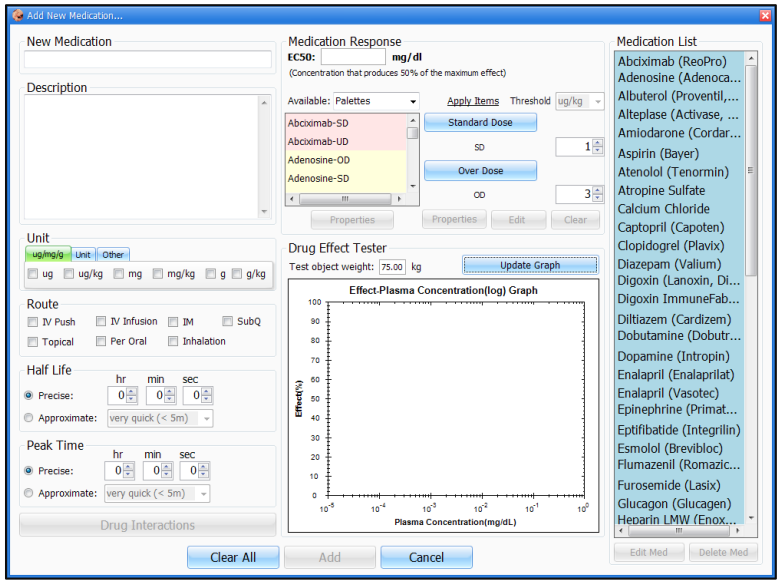
First, go to the Details tab and create a palette item with vital sign parameters consistent with the effects of a standard drug dose. Then, create an additional palette for the effects of an overdose. These two palette items will be later used to program the medication's dosage effect. For general information on creating a palette items, go to page 32.



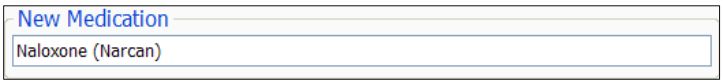

After creating the dose effect palettes got to the drug tab and click the **Manage Drug List** button.



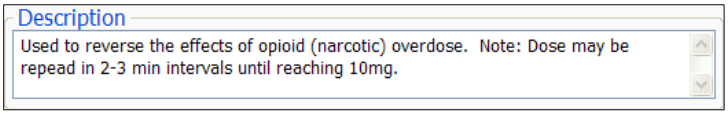
The Add New Medication window appears. A list of all the drugs included with the Meds Profile is shown on the right.



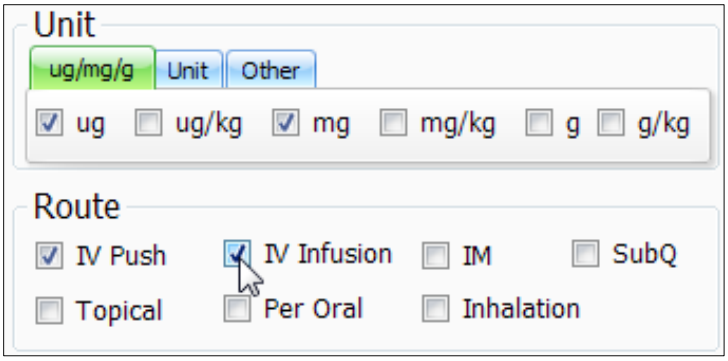

1. Type the name of the new drug under New Medication following this pattern: Generic Name (Brand Name).



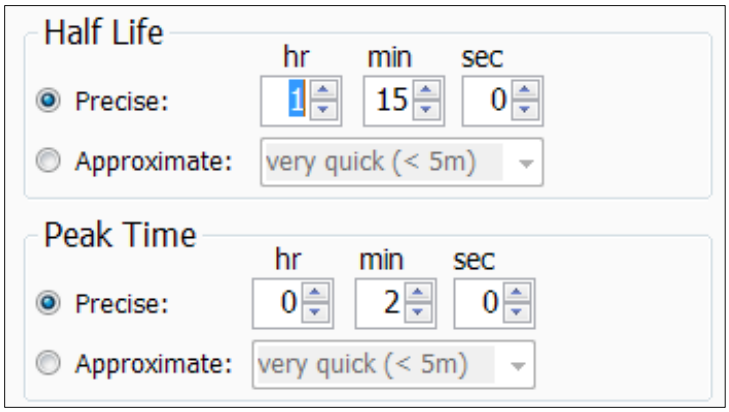

2. In the Description field, type the condition this medication treats and reference information about the dosage.


Description
Used to reverse the effects of opioid (narcotic) overdose. Note: Dose may be
repead in 2-3 min intervals until reaching 10mg.

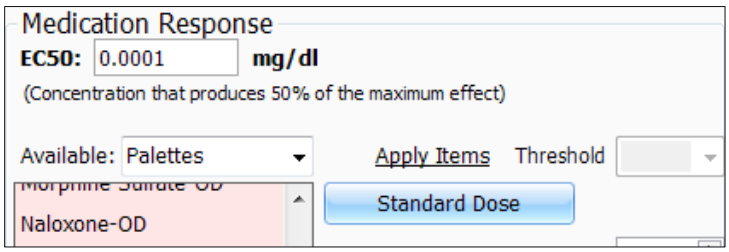
3. Select the units and the administration route.



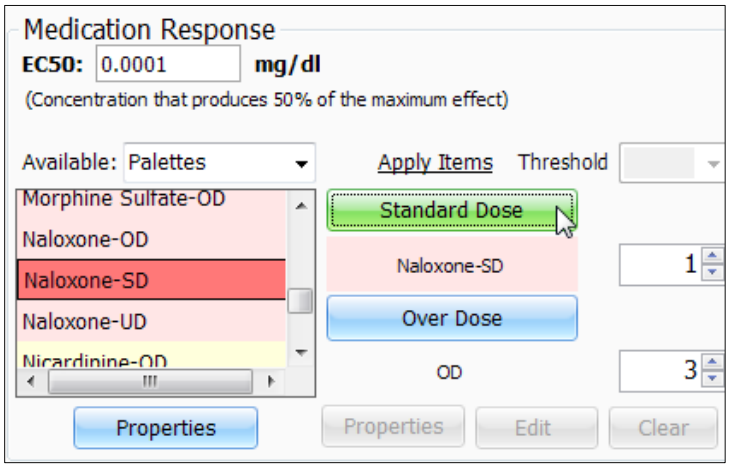
4. Enter the drug's Half Life and Peak time. If these numbers are unknown, use the approximate option.



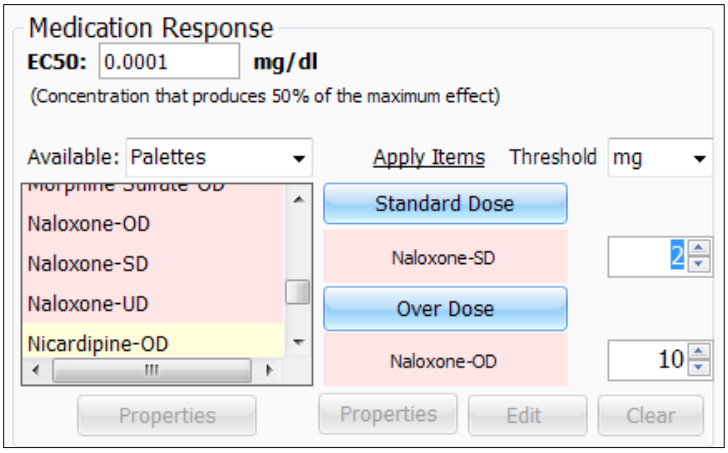

5. Enter half maximal effective concentration.




6. From the list, select the dose effect palette created earlier and click the applicable dosage button to assign. Repeat this step to assign the over dose effect palette to the Over Dose option.

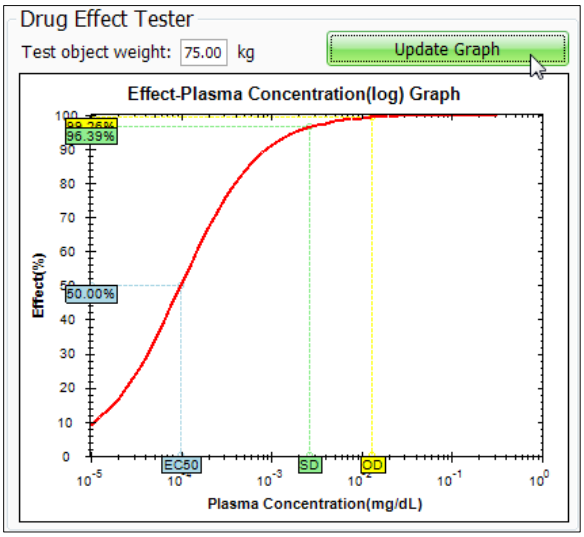


7. Select the threshold unit and adjust the value for each dosage effect.



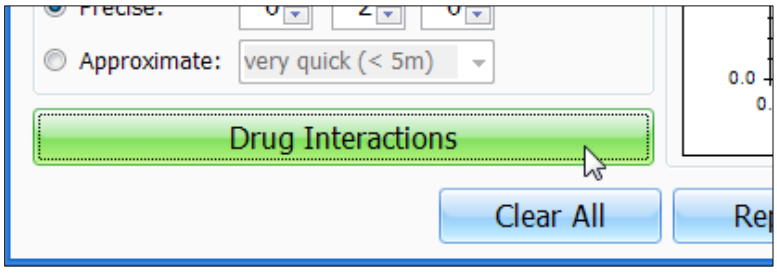

## DRUG EFFECT TESTER

After configuring the drug properties, click the **Update Graph** button to generate the effect-plasma concentration results. Continue to the next section to program interactors for this drug.

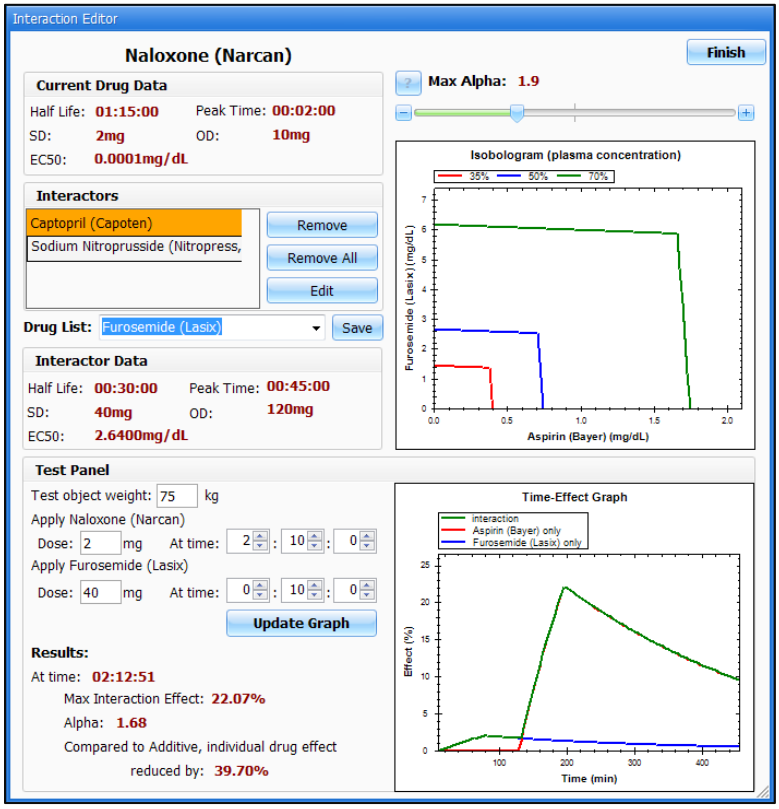



## DRUG INTERACTION EDITOR

Click on the **Drug Interactions** button to begin.

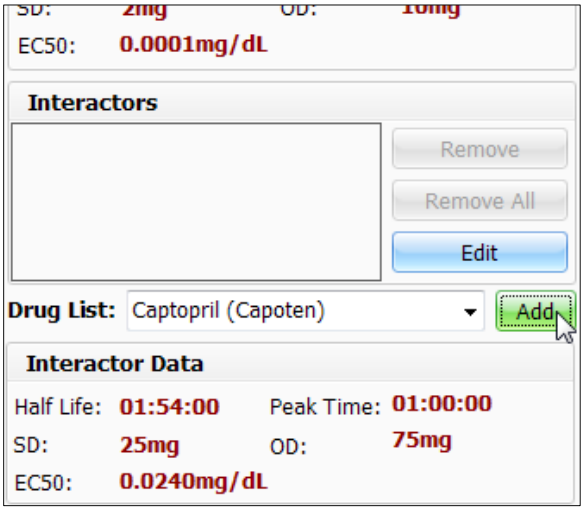


The **Interaction Editor** window is used to program and test interactions between medications in the drug library. When two or more medications preprogrammed to interact are administered, the physiologic model will adjust vital signs as a response of the interaction effect.

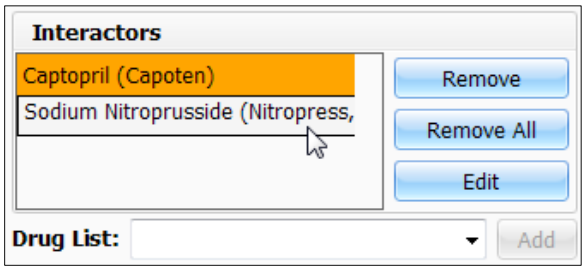



## ADDING AN INTERACTOR

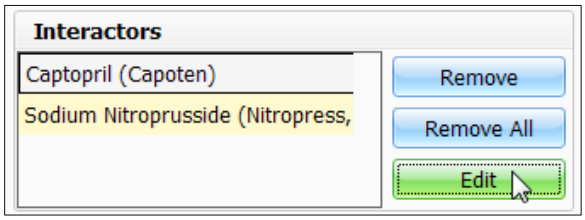
First, select the drug from the drug list that will be programmed to interact with the current medication and click **Add**. Information about the interactor drug is displayed in the Interactor Data window.



Once added, the drug is shown in the interactors list. Repeat the process to add more drugs to the interactors list if necessary.

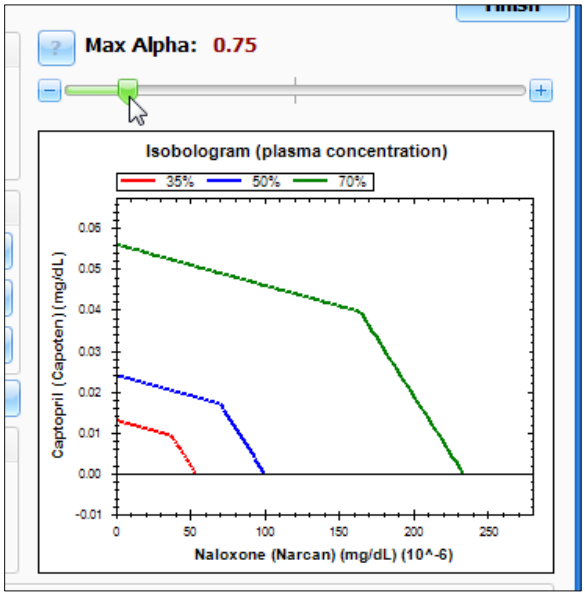



Select the interactor and click **Edit**.



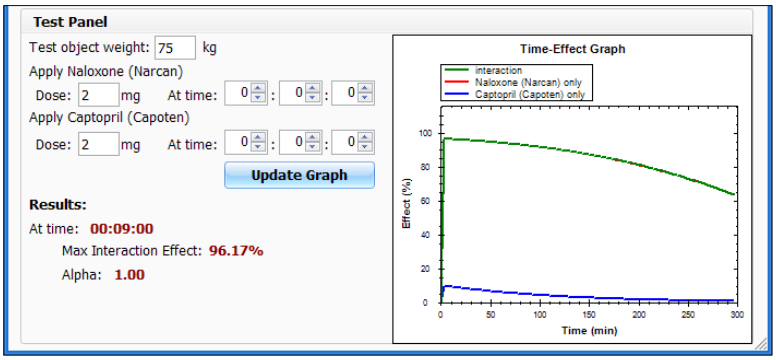

On the right, adjust the **Max Alpha** to modify the type of interactivity effect. Monitor the graph for a visual model of the plasma concentration.

- **Alpha** = 1: Additive
- **Alpha** < 1: Synergistic/Induction
- **Alpha** > 1: Antagonistic/Inhibition

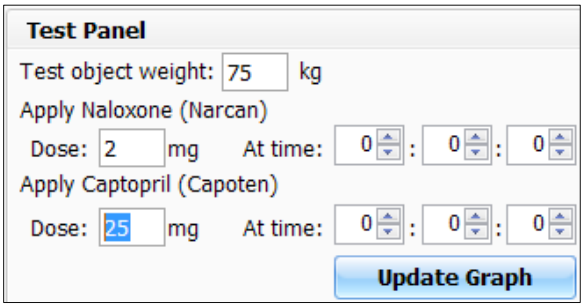


## TEST PANEL

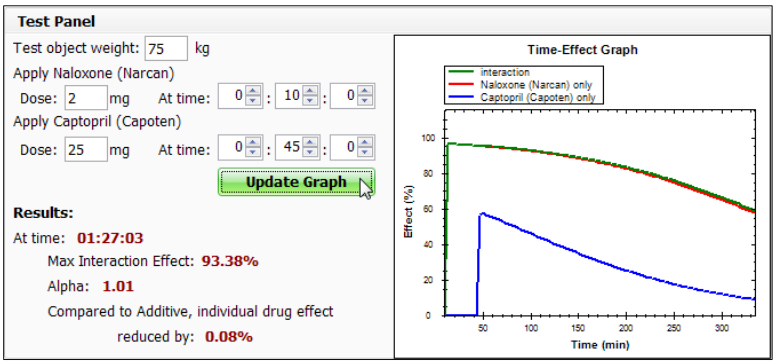
The test panel simulates the interactivity between the drugs based on dosage and time of administration.



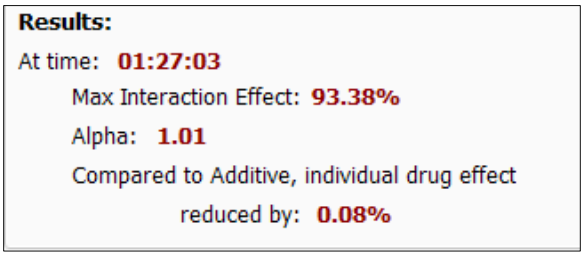

To simulate the interaction, first enter the patient's weight and then the dose for each drug.


Test Panel
Test object weight: 75 kg
Apply Naloxone (Narcan)
Dose: 2 mg At time: 0 : 0 : 0
Apply Captopril (Capoten)
Dose: 25 mg At time: 0 : 0 : 0
Update Graph

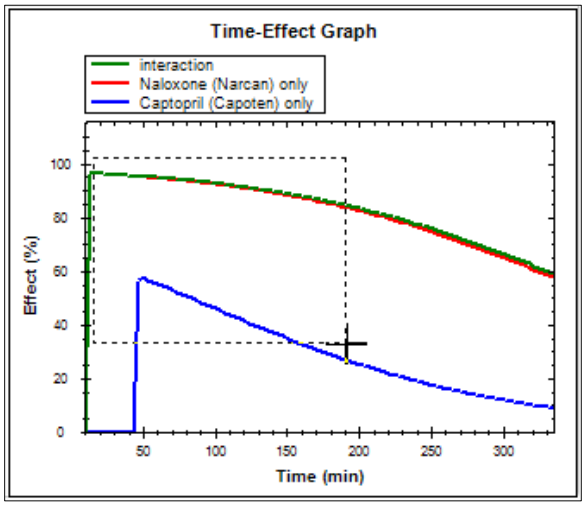
Lastly, enter the time of administration for each drug and click **Update Graph**.



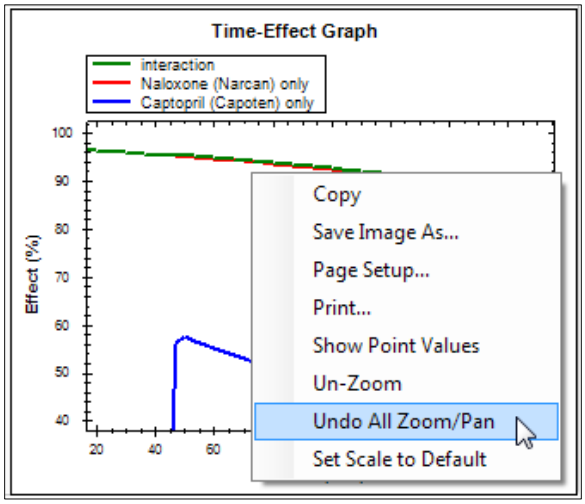

The results indicate that the maximum interaction effect (93.38 %) occurs at 01:27:03. The alpha at that point is 1.01 and the drug effect for each drug is reduced by 0.08%. If the drug interaction effect is not realistic, fine tune the Max Alpha control and retest.



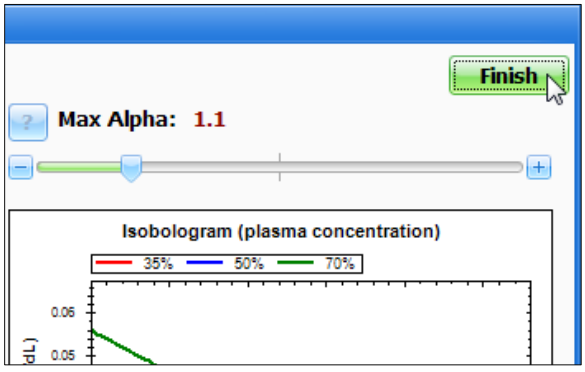
A time-effect graph is also generated from the test results. Tap and hold to draw a zoom area.



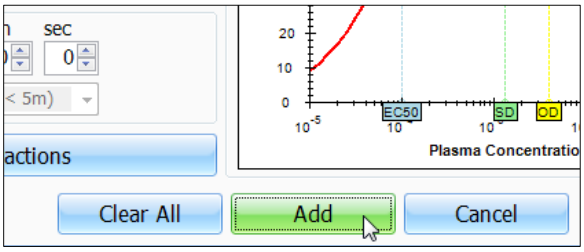

To un-zoom or print, right click anywhere on the graph to access additional options.



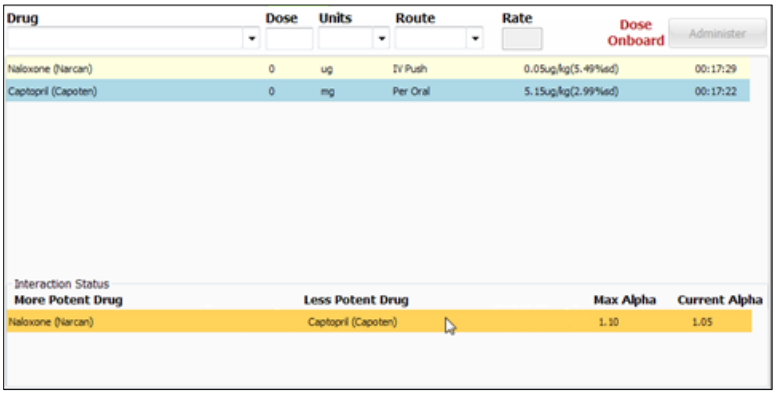

After all the interactors are configured and tested, click on **Finish** to save the interaction settings.



Lastly, review all the properties of the new medication and click Add to save.

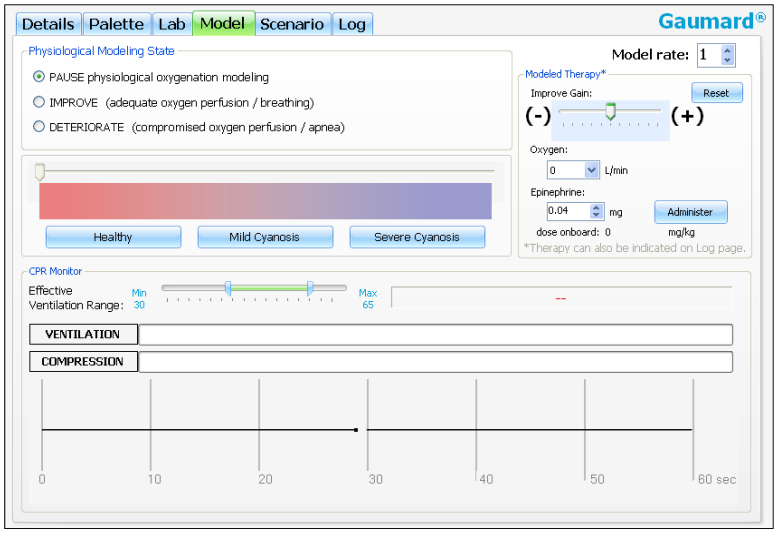



In the example below, two drugs programmed with interactions have been administered. The physiologic model has detected the interaction and displays additional information for the facilitator to monitor.



# Model

The physiological model controls all vital signs and skin color and, depending on effectiveness of provider intervention, it will improve or deteriorate the state of Premie HAL. The model speed can be controlled through the Model warp-factor, which goes from 1 to 5 (1 representing real-time).




## PHYSIOLOGICAL MODELING STATE

Pause: Model will pause at the current state.

Improve: Model trend to a healthy state. Once the model reaches the complete Healthy state, the model will go to Pause mode.

Deteriorate: Model will trend to a severe cyanotic state. If ventilations given to the neonate are of correct depth and between 40 and 60 per minute, the vital signs will improve. Otherwise, they will continue to deteriorate.

## CYANOSIS LEVELS

The facilitator can quickly jump to any of the three points in the state of the model.

Healthy: Pedi is pink with adequate oxygenation.

Mild Cyanosis: Pedi is bluish and vital signs are starting to deteriorate.

Severe Cyanosis: Pedi is blue, apneic and vital signs are rapidly worsening.

## MODELED THERAPY

Improve Gain: Moving this slider will help increase or decrease the cyanotic response to ventilations.

Oxygen: By selecting an oxygen rate, the baby will improve faster with proper ventilation. Flow On must be selected to activate the oxygen response.

Epinephrine: Select the desired epinephrine dose and then select “Administer”. Immediately the heart rate of the Premie HAL should rise and the dose on board should start diminishing over time. The dose should be enough to increase the heart rate a small percentage in order to help the oxygen delivery in the system, therefore helping improve the neonate with proper ventilation.

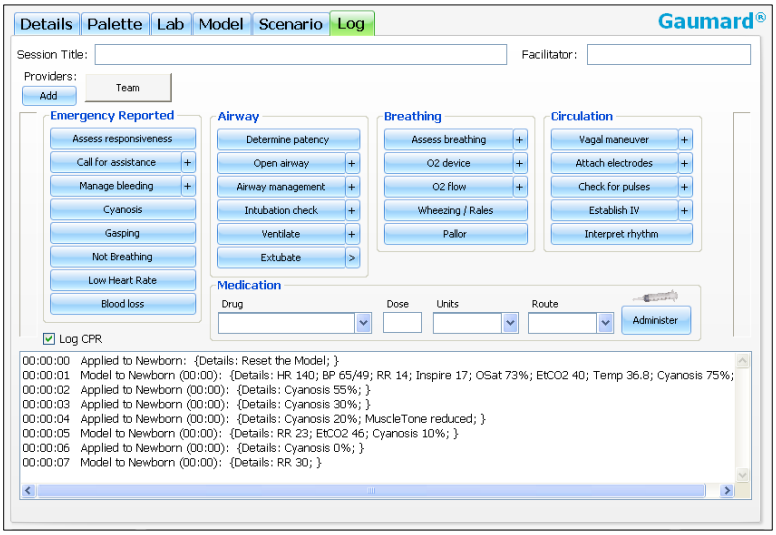
Reset: By selecting “Reset” the oxygen flow and the epinephrine dose onboard will be eliminated.

## CPR MONITOR

The CPR monitor has two bar graphs and a real time display that give the user some feedback on the CPR given to Premie HAL. Both bar graphs have a label on the left that change color representing low (yellow), correct (green) and high (red) levels of treatment. At the same time, the real time graphs also show each compression and ventilation.

# Log

The Log page allows the facilitator to keep track of every event during a session. It automatically creates an entry whenever a detected event occurs as well as every time there is a change in the patient's condition. In addition, the facilitator can log observed provider actions with a simple click.




The Log page consists of four different areas (from bottom to top): the text log, provider action buttons, team logging buttons, and session info.

## TEXT LOG

This is the large panel at the bottom of the Log Page, containing all the time-stamped text entries. Every event in a session is recorded as an entry in the Text Log. The different types of entries are: Actions, Applied Changes, Detected Events, Evaluations, Model, and Notes.

## ACTIONS

Actions refer to those performed by one of the providers in the session. The facilitator can quickly log actions from the Provider Actions section and make the entry more specific using the Team Logging feature. The following is an example of an Action entry:

"00:07:24 Action (Assess responsiveness)"

## APPLIED CHANGES

An “Applied” log entry occurs automatically every time there is a change to the physiological condition of the simulator. In other words, every time changes are made from the Details page, Palette page, or from a Scenario a log entry like the following is created:

"00:04:01 Applied (00:30): Details: Rhythm Sinus; Cardiac event 0; HR 140;"

## DETECTED EVENTS

Every time one of the various sensors in the simulator detects a provider action, it is automatically logged as a “Detected” entry. These actions include intubation, BP cuff placement, artificial ventilations, and chest compressions. The following example shows an entry after a provider performs BVM ventilation:

"00:03:26 Detected (ventilation): correct"

## EVALUATIONS

Evaluations are added by the facilitator by clicking on the “Satisfactory” or “Unsatisfactory” buttons on the Evaluation panel. Team Logging allows the facilitator to evaluate individual providers with a single click. For example, if provider Charles Parker did a correct procedure, the Evaluation entry would be:

"00:00:28 [Charles Parker] Evaluation (Care Provided): SATISFACTORY"

## MODEL

When the facilitator changes the state of the cyanosis model from the Model page, an entry in the text log is automatically generated:

"00:18:10 Action (Hypoxia Model): deteriorating

## NOTES

Notes can be entered directly from the Evaluation panel or by right-clicking on the text log and adding a note. The following is an example of a Note entry:

"00:10:10 Note: provider took too long to assess patient."

Provider actions

The Provider Actions section refers to the collection of buttons in the middle of the page. It allows the facilitator to accurately keep track of provider actions. The buttons are grouped into 5 groups: Emergency Reported, Airway, Breathing, Circulation, and Medication. Anytime the facilitator clicks one of the buttons, a time-stamped log entry is generated with that particular action. For example, if the “Assess responsiveness” button is clicked when the session clock reads 00:07:24, the following entry is automatically generated:

"00:07:24 Action (Assess Responsiveness)"

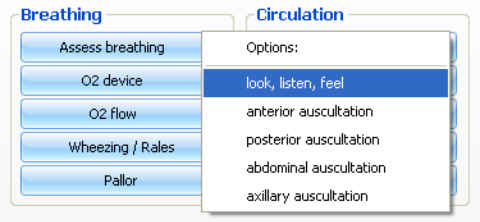
Special Buttons

Some provider-action buttons are accompanied by a special option button:

The first special button, “ + “, lets the facilitator log actions in more detail. For example, if the button “Assess breathing” is clicked, the following entry is created:

"00:01:28 Action (Assess breathing)"

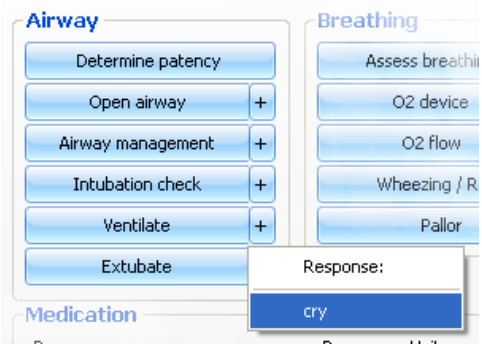
On the other hand, if the “ + “ button next to “Ventilate” is clicked, a list of additional options appears. The facilitator can be more specific and choose, for example, “look, listen, feel”…




...and the following entry is added:

"00:01:28  Action (Ventilate): look, listen, feel"

The second special button, “ > “,  allows pre-programming common responses to specific actions. For example, the facilitator can pre-program normal respiratory sounds and re-enable the lungs when the provider performs a needle decompression.

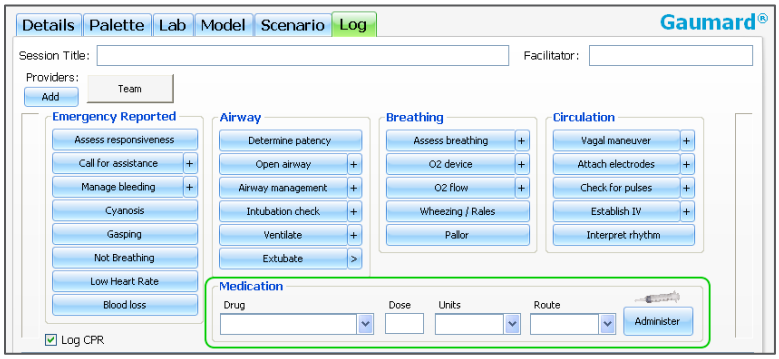



When the “extubate” button is clicked, the following entry is created:

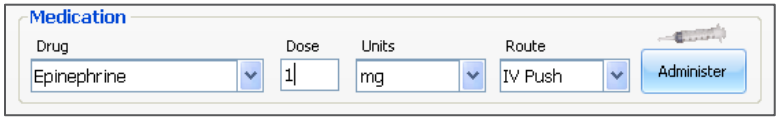
"00:01:28  Action (Extubate): cry"

## MEDICATIONS (MANUAL MODE ONLY)

The Medications section allows for easy and fast logging of drugs administration, including dose and route.  The software comes preloaded with a set of commonly used drugs.  Each of these drugs has a default dose unit and a default route for administration (which can be overwritten by just typing over).  For example, for Epinephrine the default dose unit is "ml/kg" and the default route is "IVP" (intravenous push).  In order to enter, for example, that a provider administered .1 ml/kg of epinephrine via IVP, the facilitator just has to enter the text "e" and the software automatically searches the drug list and displays the best match (if any).




After a drug has been selected, just clicking on the “dose” text field automatically fills the units and route fields with the default values for that particular drug.



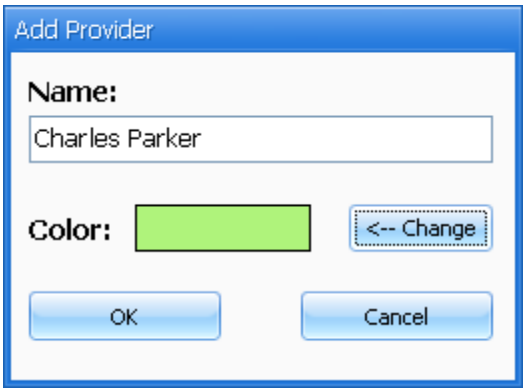

The facilitator then enters the dose and clicks on the “Administered” button and a log entry is created (let's say the dose entered was “.1”):

"00:05:43  Action (Medication Administered): Epinephrine, .1ml/kg, IVB/IVP"

## TEAM LOGGING

The Team Logging feature allows the facilitator to designate which member of the team performed a particular action. The Team Logging section is right above the Provider Actions section on the Log page.

First, the facilitator should add all providers in the team, one by one, by clicking on the Add button and filling the Add Provider window.



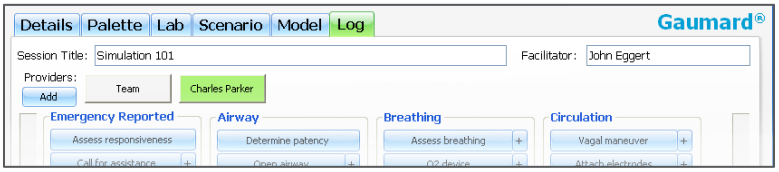

As shown in the Log Page image , a colored button is inserted on the Team Logging region for the provider just added. There can be up to 6 different providers, each with a corresponding button. Every time one of the provider buttons is clicked, that person becomes the active provider. To indicate the active provider, the vertical bars on each side of the Log page will match the color chosen for that person. On the Log Page image, for example, the provider "Charles Parker" is the active provider, so the vertical bars are teal colored. While there is an active provider, every time a Provider Action or Evaluation log entry is created it will have the name of the provider added to it as follows:

"00:07:41 [Charles Parker] Action (Check for pulses): brachial"

To deactivate deselect the active provider and return to general logging, click the Team button and the vertical bars will return to neutral color. All provider buttons can be edited or deleted by right-clicking them and selecting an option from the menu.

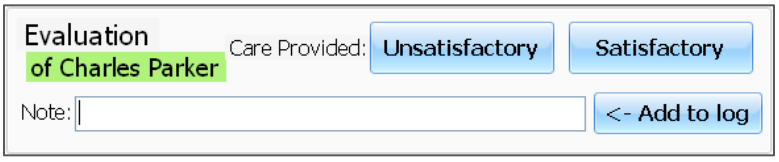
## SESSION INFO

The session info area contains the “Session Title” and “Facilitator” fields at the top of the page. These fields are included when a report is saved or printed.

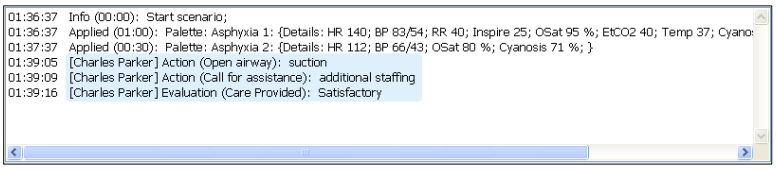



## EVALUATION

The Evaluation panel, always visible at the bottom of the software window, allows the facilitator to insert standard evaluations or arbitrary notes into the log. The stylus device and hand-writing recognition technology makes annotating in real-time very fast and convenient.



Standard evaluations are given context by their position in the log relative to detected and observed provider actions. The following example illustrates this idea.

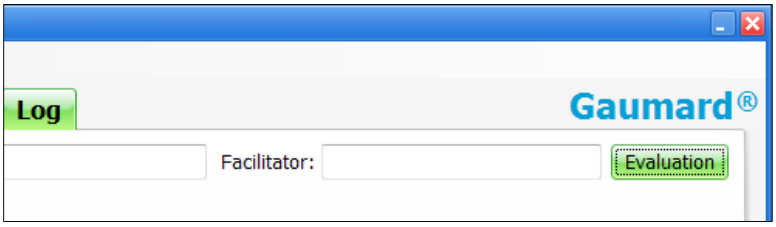

01:36:37 Info (00:00): Start scenario;
01:36:37 Applied (01:00): Palette: Asphyxia 1: {Details: HR 140; BP 83/54; RR 40; Inspire 25; OSat 95 %; EtCO2 40; Temp 37; Cyano
01:37:37 Applied (00:30): Palette: Asphyxia 2: {Details: HR 112; BP 66/43; OSat 80 %; Cyanosis 71 %; }
01:39:05 [Charles Parker] Action (Open airway): suction
01:39:09 [Charles Parker] Action (Call for assistance): additional staffing
01:39:16 [Charles Parker] Evaluation (Care Provided): Satisfactory

Note in the highlighted lines above that the provider "Charles Parker" cleared the patient's airway, called for help and was then evaluated on those actions.

The evaluation panel is part of the team-logging system, described previously. When a particular provider is selected, log entries generated via the Evaluation panel will be prepended with the provider's name. For more information on Team Logging, see the previous section of this guide on Logging.

# Evaluation Form

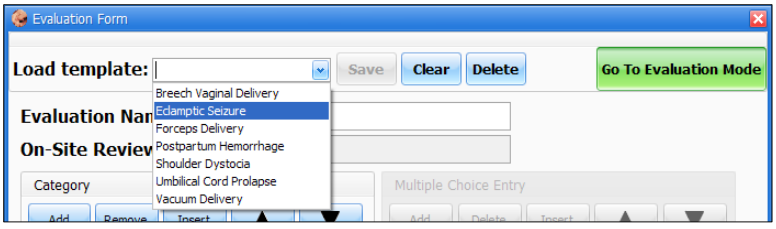
The evaluation tool assists facilitators in reporting and assessing provider interaction using a questionnaire form. A completed evaluation form can then be stored as a digital document or printed for distribution.



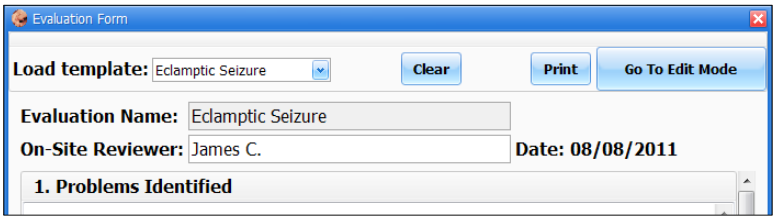

## USING BUILT-IN EVALUATION TEMPLATES

Several evaluation templates are built-in to GaumardUI's evaluation tool. Each template includes a set of multiple choice questions related to the type of assessment being performed.

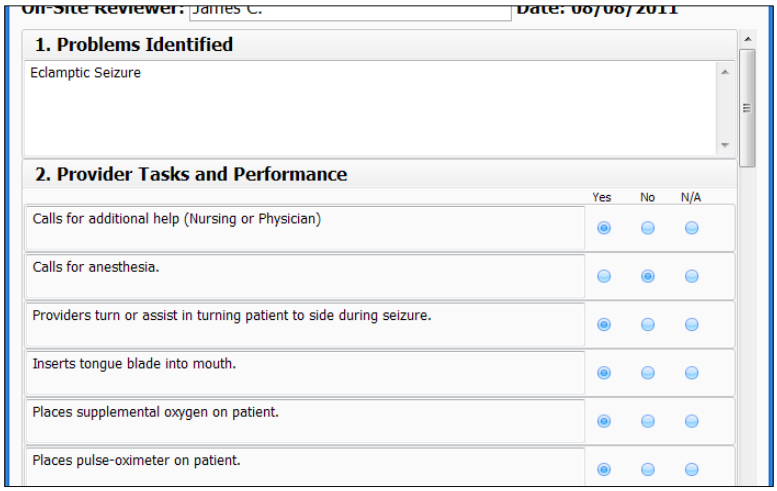
To begin, select an evaluation template from the Load Template dropdown. New templates created in the edit mode will also be listed.



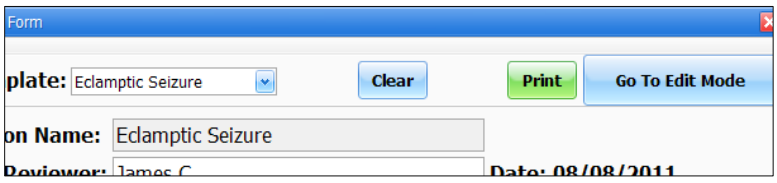

Enter the name of the facilitator performing the review in the On-Site Reviewer field.



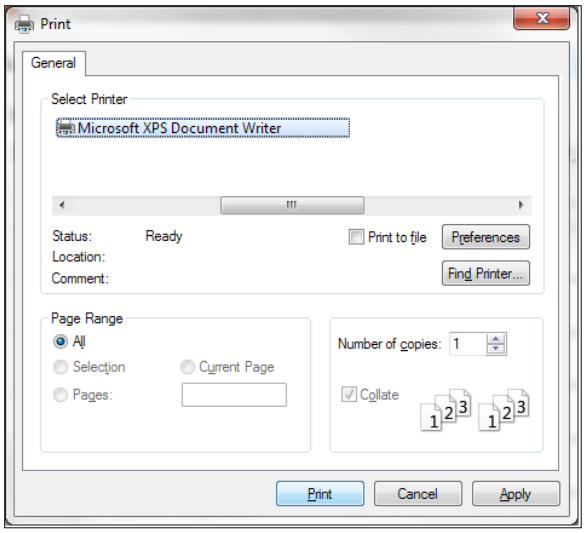
Complete the form by first entering the written response in the “Problems Identified” field and selecting the applicable multiple choice responses throughout.



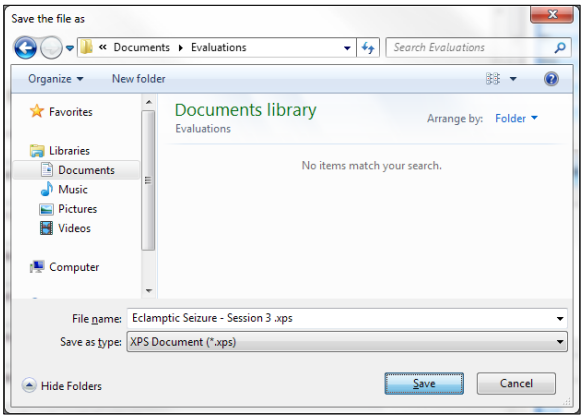

Once the evaluation is completed, click the Print button located at the top right corner of the screen.




To save the finished evaluation as digital document, select “Microsoft XPS Document” writer and click Print.

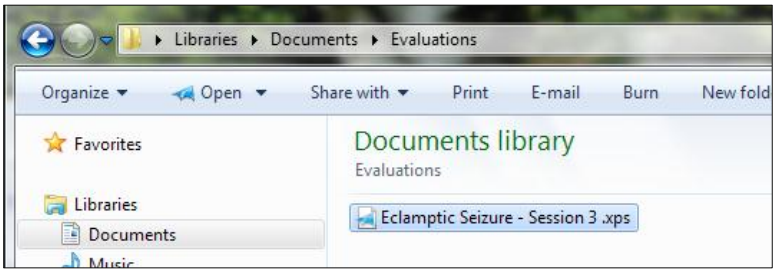


Enter the name of the evaluation, Select a location and click Save.

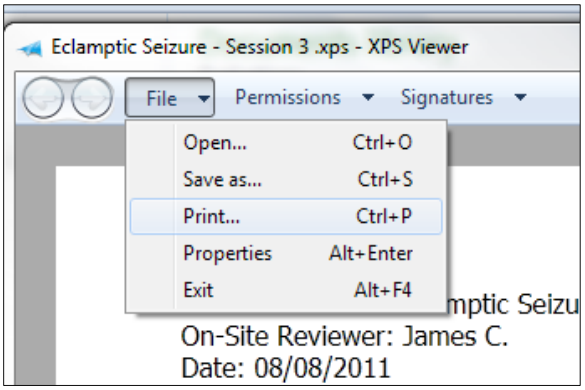



## PRINTING AN EVALUATION

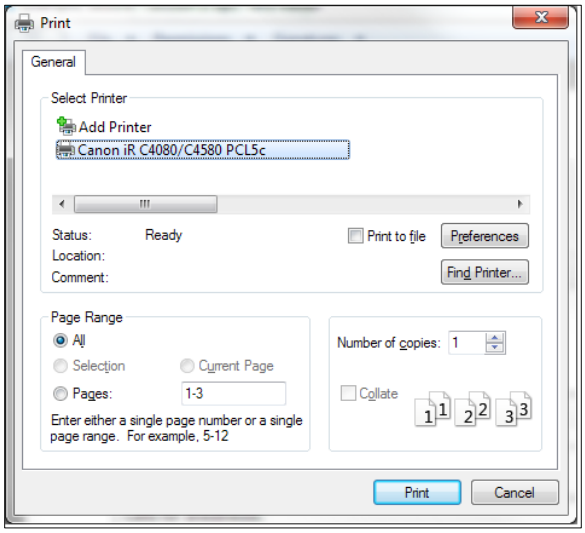
If the tablet is connected to a printer, first select and open the evaluation document saved in the previous step.




In the XPS Viewer, navigate to the file menu and select print.



Select the printer device from the list box and click print.

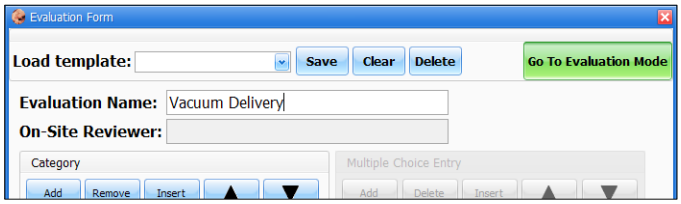



It is recommended that documents are first saved as XPS files before being printed into hard copies.

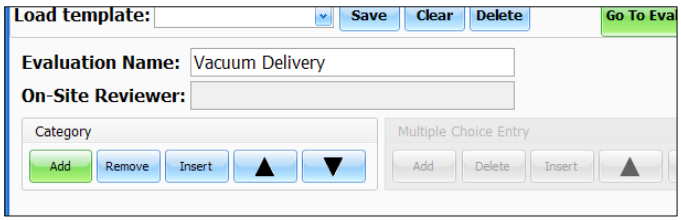
## CREATING NEW EVALUATION TEMPLATES

Each evaluation is based on an evaluation template. Facilitators can create new evaluation templates to tailor specific assessment needs. Template design and creation is done in the evaluation form edit mode. To enter the edit mode, toggle the Go To button located on the top right of the evaluation form window.

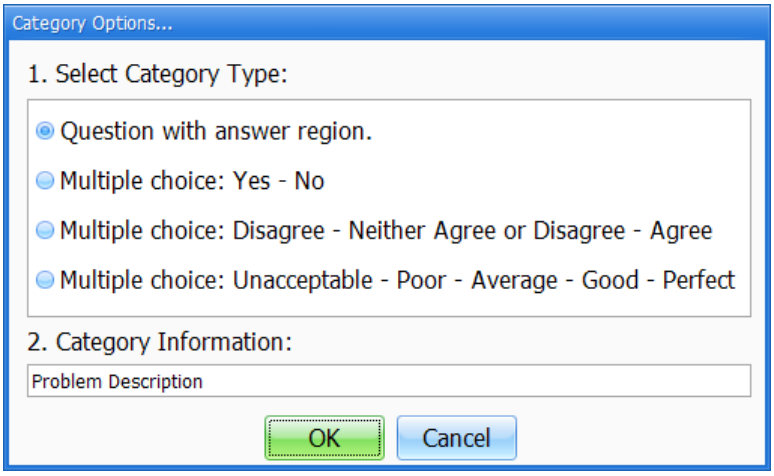
In edit mode, enter the name of the evaluation template in the Evaluation Name field.



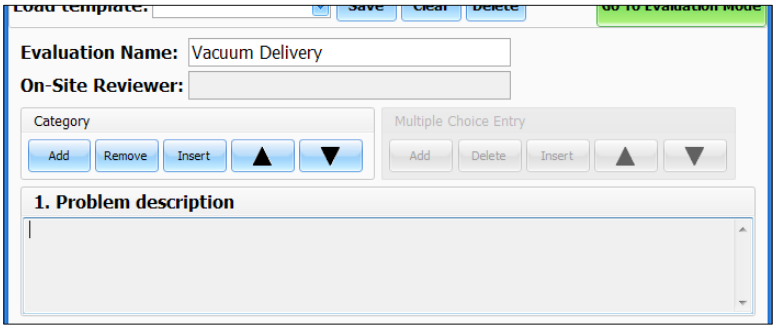

From the Category menu, click Add.



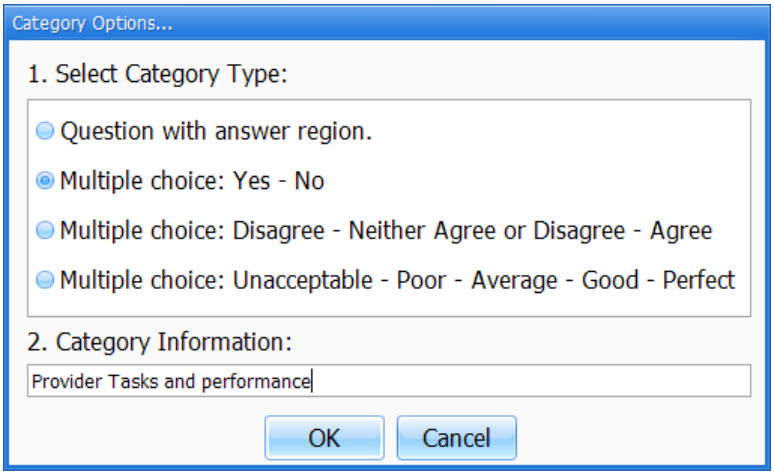
Select the Question with answer region category type and enter the category information title. To save the changes, click OK.


Category Options...
1. Select Category Type:
Question with answer region.
Multiple choice: Yes - No
Multiple choice: Disagree - Neither Agree or Disagree - Agree
Multiple choice: Unacceptable - Poor - Average - Good - Perfect
2. Category Information:
Problem Description
OK
Cancel

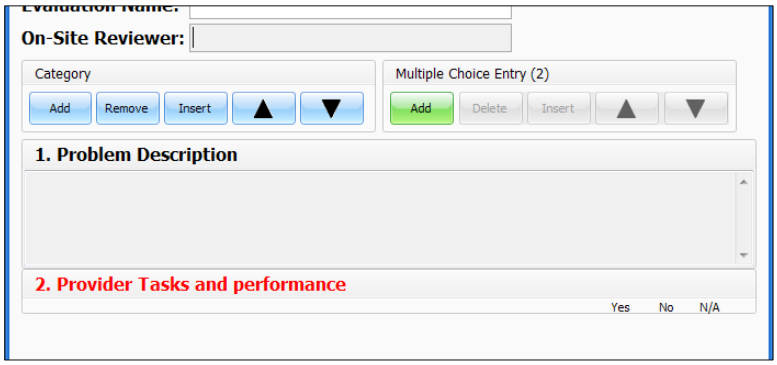
The newly created category is shown.



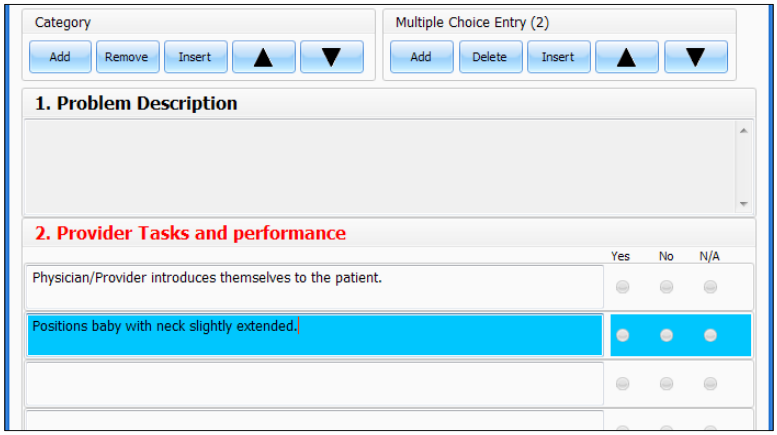

Click, Add to include another category. Select the Multiple choice category type, enter the category information title and click OK.


Category Options...
1. Select Category Type:
Question with answer region.
Multiple choice: Yes - No
Multiple choice: Disagree - Neither Agree or Disagree - Agree
Multiple choice: Unacceptable - Poor - Average - Good - Perfect
2. Category Information:
Provider Tasks and performance
OK
Cancel

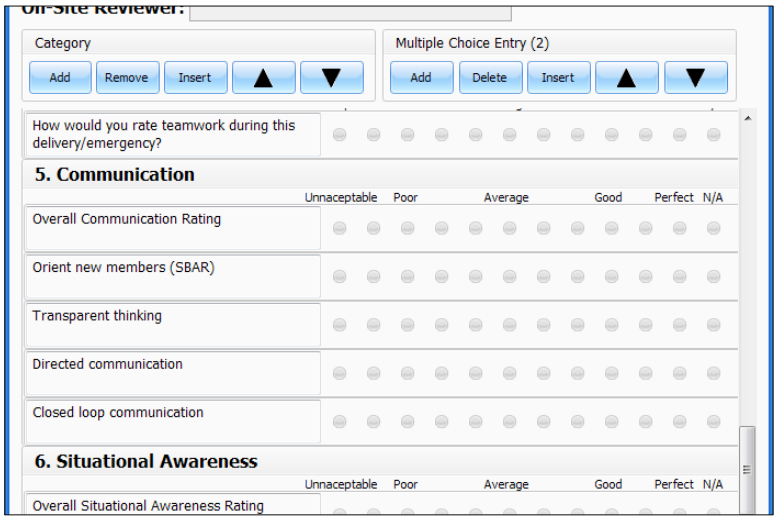
Highlight the Provider tasks and performance category and then click Add from the Multiple Choice Entry menu.



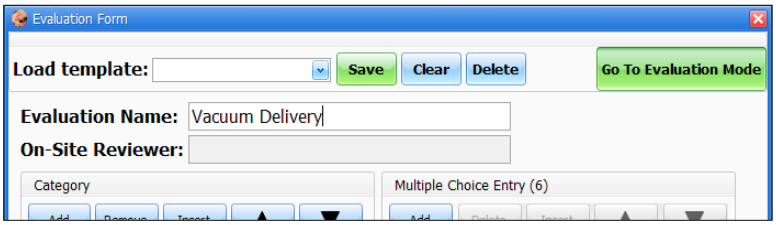

Enter the multiple choice information in the entry fields.



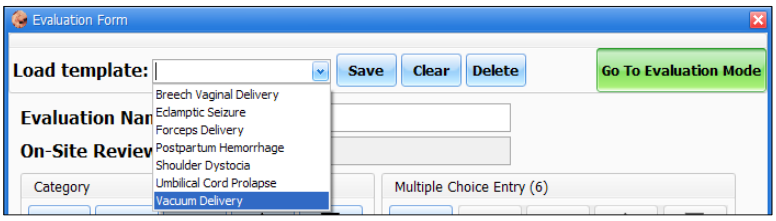

Repeat the previous steps to add more categories, questions and multiple choice options.



After the evaluation template design is complete, click Save at the top of the window.

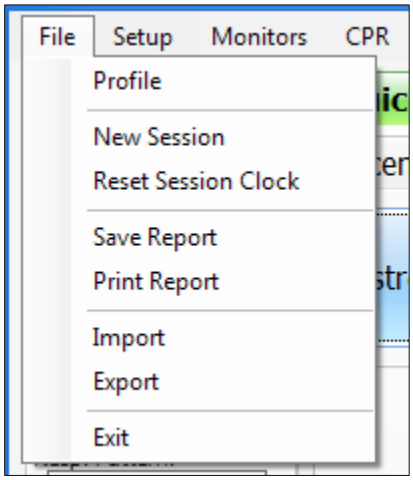



Finally, select the new template from the Load template drop down to use the completed evaluation form.



# Menus

## File




### PROFILE

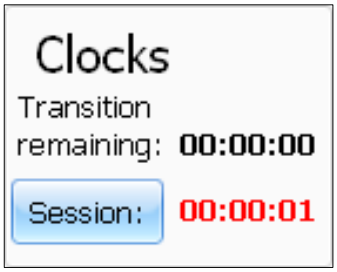
This option allows you to change your current profile.

### NEW SESSION

Clicking New Session in the file menu will:

- Clear any loaded/playing scenario
- Clear any loaded/playing palette
- Resets vital signs to normal values
- Clears out log page
- Restart the session clock.

The session clock is located at the bottom of the window.



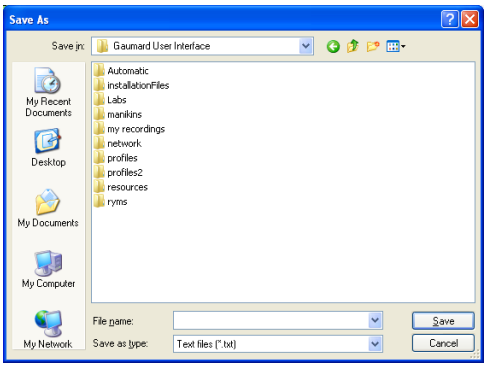

The shortcut key for staring a new session is Ctrl + N.

### RESET SESSION CLOCK

Clicking on Reset Session Clock resets the clock back to zero. It does not have any effect on the transition time remaining on a scenario; it does not reset the vital signs, or clear out loaded scenarios. The session clock may also be reset by clicking on the Session button next to the session time.

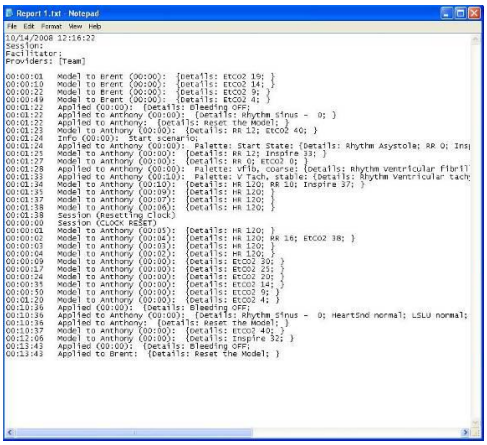
### SAVE REPORT

This option allows all the information recorded in the log page to be saved as a text file. Clicking on it brings up the “Save As” dialog box:




Select the desired name and path, and click “Save”.

The shortcut key for saving a report is Ctrl + S. For a sample report, look at the figure below:



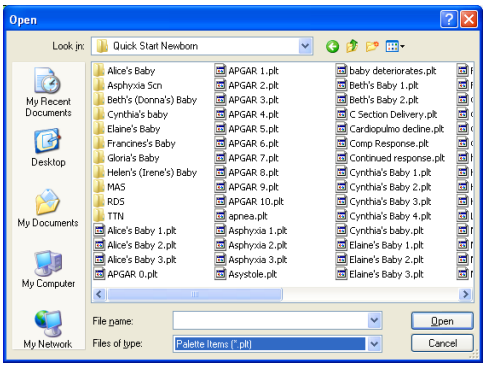
### PRINT REPORT

This option allows printing a text file containing all the information in the log for the latest session. Clicking on Print Report brings up the Print dialog box.

The shortcut key for this option is Ctrl + P.

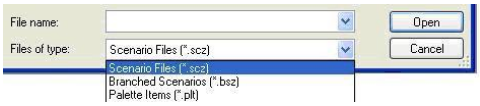
## IMPORT

This tool allows the import of palettes, scenarios or modeling patients that may have been created in another tablet PC. When Import is clicked, the “Open” dialog box displays:



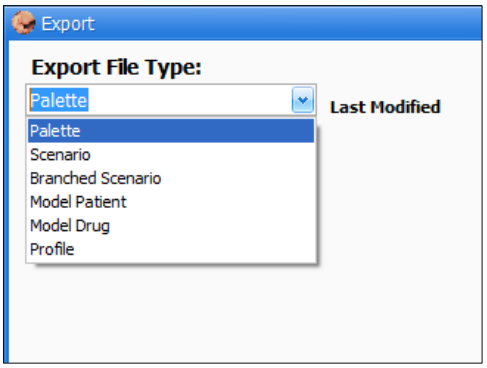

Browse to the location where the documents are saved and open it. They are automatically brought into the GaumardUI.

Make sure that to select the correct file type.

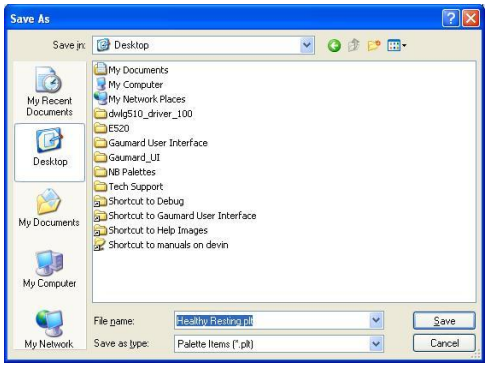



## EXPORT

Palettes, scenarios (branched or linear), model patients and drugs, and profiles may be all exported.




Make a selection and click “Export”. The “Save As” dialog box is then displayed:

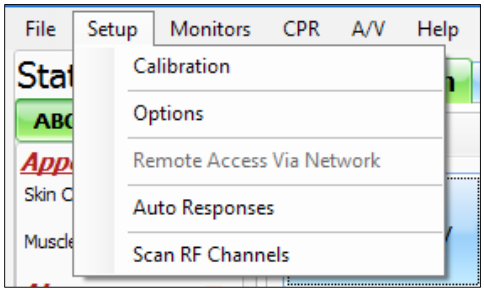



Specify a path and click “Save”.

## EXIT

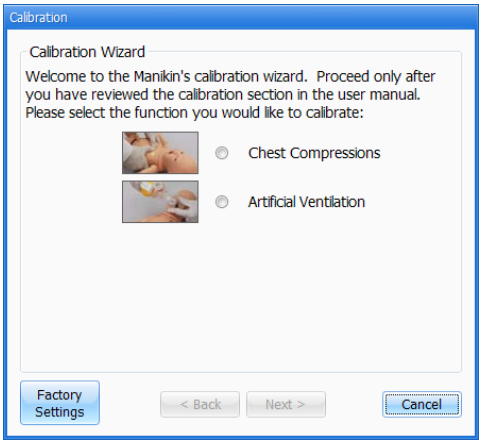
You can exit the software at any time by going to File, Exit. You can also close down the software by using the shortcut key Alt + F4. You can also exit by clicking on the “x” button at the top right corner of the user interface.

# Setup




## CALIBRATION

This tool allows you to easily calibrate the sensors inside the simulator. First choose which function you would like to calibrate: chest compressions, artificial ventilations, or blood pressure cuff.


Calibration
Calibration Wizard
Welcome to the Manikin's calibration wizard. Proceed only after you have reviewed the calibration section in the user manual.
Please select the function you would like to calibrate:
Chest Compressions
Artificial Ventilation
Factory Settings
< Back
Next >
Cancel

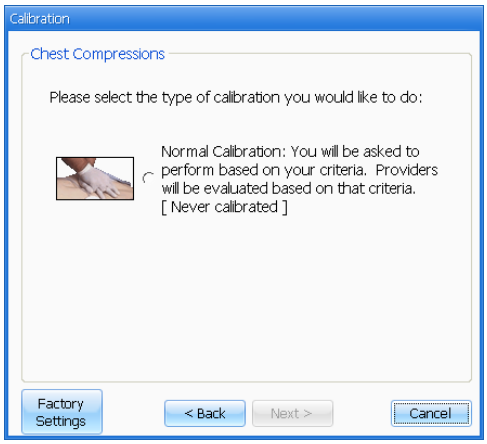
The procedures for each specific calibration are described in the sections below.

## CHEST COMPRESSIONS/ARTIFICIAL VENTILATIONS

This tool helps you calibrate the chest compressions and the artificial ventilations to your specific criteria. That is, you will be telling the system what a correct chest compression is and/or what a correct artificial ventilation is. Providers will be evaluated by the system based on this criteria.

The chest compressions and ventilations are calibrated the same way. After making a selection, this window is displayed:

The software will now ask you to perform a number of “correct” chest compressions or artificial ventilations, depending on what you are calibrating.

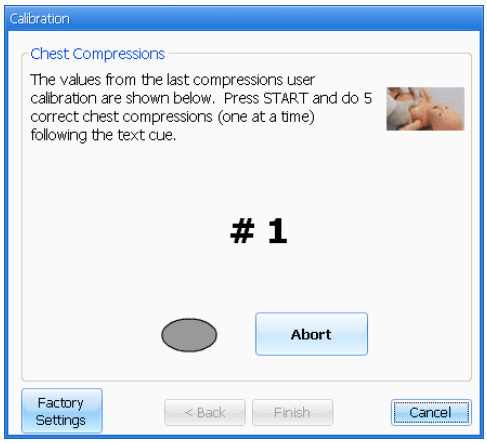

Calibration
Chest Compressions
Please select the type of calibration you would like to do:
Normal Calibration: You will be asked to perform based on your criteria. Providers will be evaluated based on that criteria.
[ Never calibrated ]
Factory Settings
< Back
Next >
Cancel

Calibration
Chest Compressions
The values from the last compressions user calibration are shown below. Press START and do 5 correct chest compressions (one at a time) following the text cue.
Never Calibrated
Start
Factory Settings
< Back
Finish
Cancel

The facilitator should follow the text cue on the screen to perform just ONE compression or ventilation at a time, until prompted for the next one.

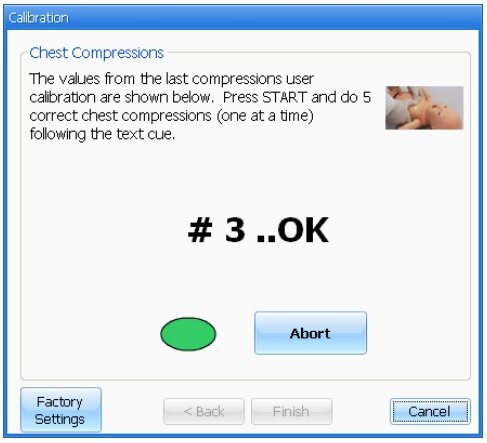
For example, if calibrating chest compressions:

The wizard prompts you with a “#1”.

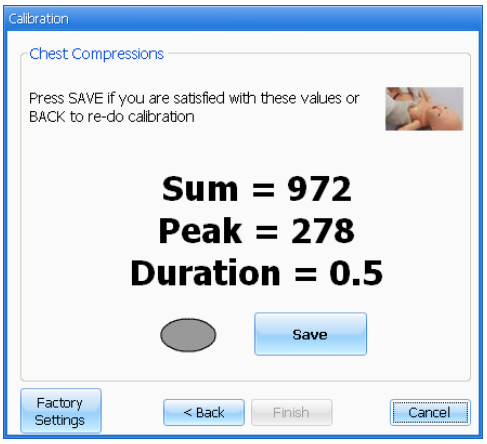

Calibration
Chest Compressions
The values from the last compressions user calibration are shown below. Press START and do 5 correct chest compressions (one at a time) following the text cue.
# 1
Abort
Factory Settings
< Back
Finish
Cancel

- Perform one correct chest compression.
- A green filled oval indicates that the chest compression was successfully recorded.

- The wizard prompts you with a “#2”.
- Perform a second correct chest compression.
- A green filled oval indicates that the chest compression was successfully recorded.
- ...and so on.


Calibration
Chest Compressions
The values from the last compressions user calibration are shown below. Press START and do 5 correct chest compressions (one at a time) following the text cue.
# 3 ..OK
Abort
Factory Settings
< Back
Finish
Cancel

At the end of the calibrating session, the wizard shows the average peak, depth, and duration values for the procedure. If you feel you performed the procedures correctly, click the “Save” button. Otherwise, press the “Back” button to repeat the calibration.

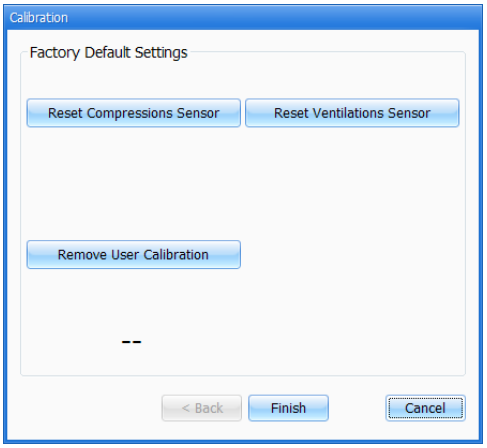



Notice that you can go back, abort or cancel at any time during the procedure.

## FACTORY SETTINGS

Factory Settings is a very useful tool to consider when recalibrating. It restores the sensors to factory settings over-riding any calibrations performed by users. Make sure that when you are restoring the sensors to the factory settings that no one is practicing chest compressions, ventilations, intubation or reading a blood pressure. Any of these actions may interfere with the reset.

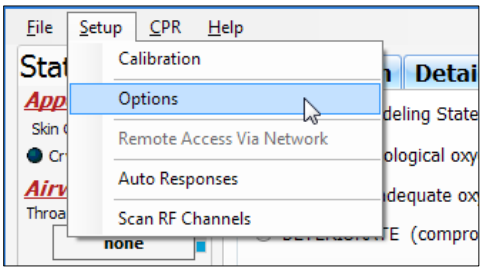
Each time that one of these sensors is clicked a message will appear at the bottom left of the screen notifying the user of the status of the reset (OK, or TRY AGAIN). Should the sensor not respond, please refer to the troubleshooting guide or contact Customer Support.




At the end of calibrating a function, the Calibration Wizard resets the simulator for the changes to take effect and displays the message "Done". If the wizard displays the message "Can't reset", it means that the new calibration values will take effect next time you start the software. If the changes need to take immediate effect, close the GaumardUI software, wait about 1 minute (for the simulator to turn off), and then start the GaumardUI software again.

## OPTIONS

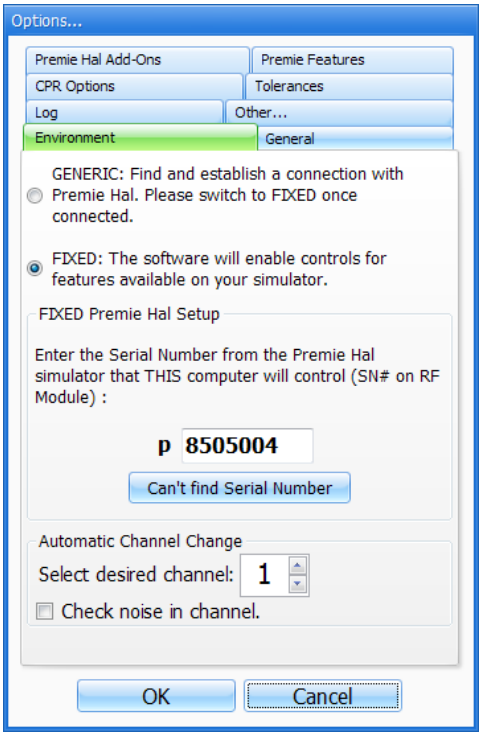
The GaumardUI has several options that can be preset by the instructor. Each of these sections is explained below.




## ENVIRONMENT

To connect to a specific simulator, select the “FIXED” option and enter the simulator's serial number in the text box. Establishing a FIXED connection is required before entering the activation codes for the simulator’s add-ons features and detecting hardware upgrades.

If you cannot locate the simulator's serial number, first set the mode to "GENERIC" and establish a connection with the simulator. Then, click the "Can't find Serial Number" to retrieve the serial number from the simulator you are currently connected to. Jot down the serial and switch over to the "FIXED" mode once the information is saved.


Options...
Premie Hal Add-Ons
Premie Features
CPR Options
Tolerances
Log
Other...
Environment
General
GENERIC: Find and establish a connection with Premie Hal. Please switch to FIXED once connected.
FIXED: The software will enable controls for features available on your simulator.
FIXED Premie Hal Setup
Enter the Serial Number from the Premie Hal simulator that THIS computer will control (SN# on RF Module) :
p 8505004
Can't find Serial Number
Automatic Channel Change
Select desired channel: 1
Check noise in channel.
OK
Cancel

Use the "Select desired channel" field to set the channel that the RF module will use to communicate with the simulator. Checkmark the "Check noise in channel" button to switch automatically to a cleaner channel if poor signal or interference is detected.

**Manually assign a unique channel for each simulator to prevent crosstalk when operating multiple Gaumard simulators in close proximity. For best results, leave one channel open between the channels in use.**

## TOLERANCES

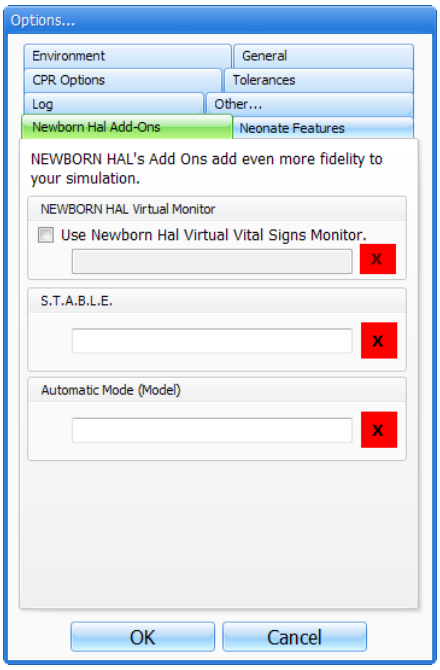
Set the intensity tolerances for the following features:

- CPR intensity for artificial ventilations and chest compressions
- CPR rate tolerances for artificial ventilation and chest compression
- Max cyanosis intensity level

## PREMIE HAL ADD-ONS

Enter the activation code to enable upgrade features. Activation codes are unique to the simulator's serial number. Before entering a code, go to the Environment tab and set the connection mode to FIXED, then enter the simulator's serial number.

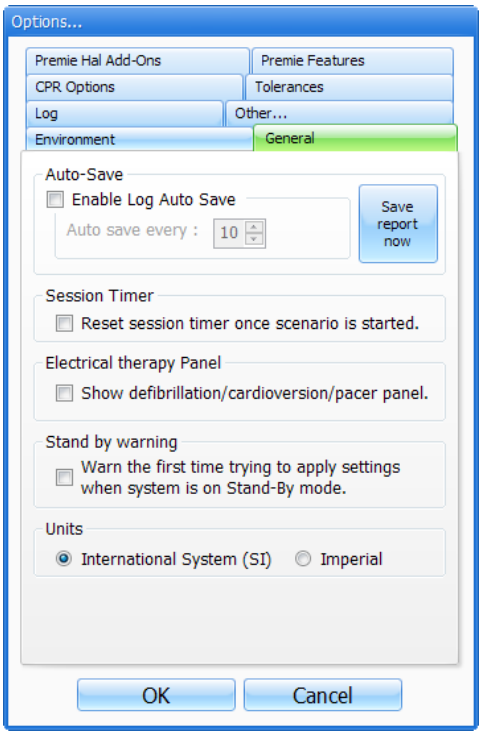
- Virtual Monitor - Enable the "Monitors" menu option to configure the virtual monitor connection. To verify the connection status between GaumardUI and the Gaumard Monitors, go to page 95.
- S.T.A.B.L.E. – Activate the (S.T.A.B.L.E.) scenarios.
- Automatic Mode – Activate the Automatic mode and the physiologic model.




## GENERAL

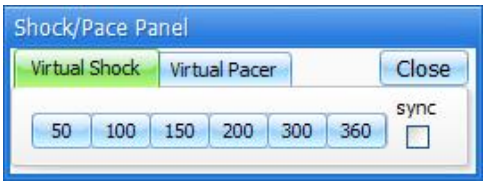
This tab allows the facilitator to:

- Enable auto saving of the log.
- Save your current log report.
- Enable stand-by warning.
- Select units (SI or English).
- Enable electrical therapy virtual shock panel




Checkmark the “Defibrillation/ Cardioversion Panel” to show the virtual “Shock Panel” shortcut on the main screen.

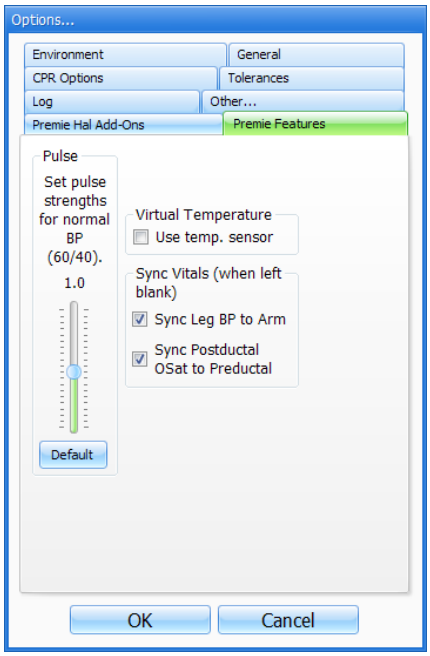
The shock panel is a floating control used by the facilitator to administer electrical therapy to the patient via software. For more information on working with the shock panel during a scenario, go to page 22.




## PREMIE FEATURES

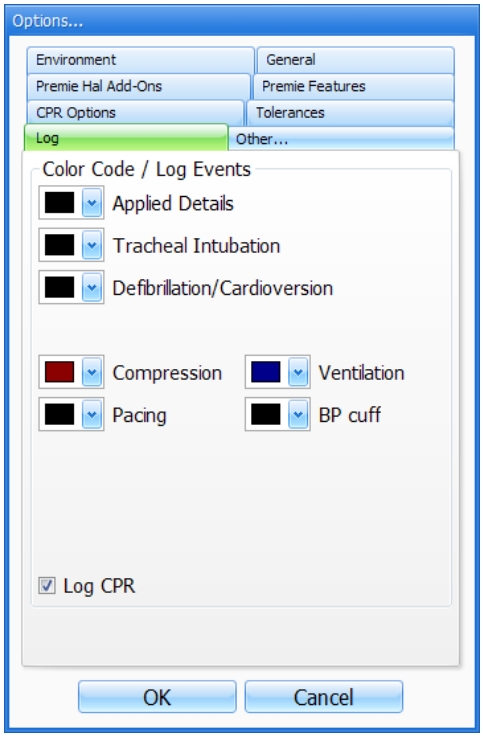
Customize the following simulator specific features:

- Fine-tune the pulse intensity for normal blood pressure.
- Synchronize the leg blood pressure to the arm blood pressure when the values are not specified.
- Synchronize post-ductal and pre ductal oxygen saturation parameters when values are not specified.
- Use temperature sensor



## LOG

On the Log tab, color set the color tag for the available log event entries.




## CPR OPTIONS

Customize the compression to ventilation ratio signaled by CPR Trainer prompt.

- Set the number of compressions per minute
- Set the compression/ventilation ratio
- Set number of ventilations per minute (if the 'Only Ventilations' button is selected).

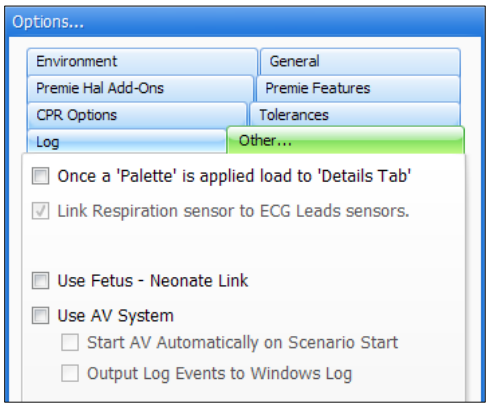
## OTHER

Checkmark "Once a 'Palette' is applied load to "Details Tab"' to show the value of each of the palette's vital signs parameters on the Detail's tab control entries.

Link the respiration sensor to the ECG to generate a waveform every time a compression is performed.

GaumardUI is capable of interfacing with a number of third-party A/V recording systems. Checkmark the "Use AV System" to enable the AV setup option on the menu bar. For more information about the A/V menu, go to page 97.

Checkmark "Use Fetus – Neonate Link" to enable the "F/N" setup menu on the menu bar. For more information about using the Neonate Link feature, go to page 87.




## REMOTE ACCESS VIA NETWORK

The "Remote Access via Network" connection feature allows the simulator to receive control commands from the virtual monitor computer stationed at the bedside. In this configuration, the RF module is connected to the virtual monitor computer instead of the control tablet. The close proximity between the RF module and the simulator may provide better connectivity in environments with solid walls between the simulator and the control computer. On the menu bar, click Setup>Remote Access via Network to open the configuration window.

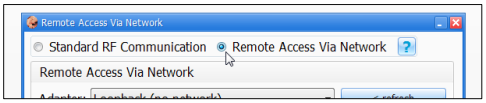
## CONFIGURATION

To use this alternate configuration, first install the USB RF module drivers on the virtual monitor computer. Navigate to www.Gaumard.com to download the USB RF module drivers, and then transfer them to the virtual monitor computer using a USB flash drive.

1. Exit the GaumardUI software and disconnect the RF module on the control computer.
2. Connect the RF module to the virtual monitor computer.
3. Verify that both computers are connected to the ad-hoc network (e.g. GaumardNet,)
4. Initialize the GaumardUI software on the tablet computer and on the menu bar, click Setup>Remote Access via Network.

The Remote Access via Network Window is displayed.

5. Select the "Remote access via network" option.




6. On the adapter list, select "Wireless Network Connection". If the option is greyed, click the "Stop" button first.
7. Click "Find available" to auto assign a port for this connection.
8. Write down the "Controller IP" and "Port" number, then click the "Connect" button. The status will not show connected until the last step of this guide.
9. Open the Gaumard Monitors software on the virtual monitor computer.
10. Click the "V" menu and select "Remote access Via Network".

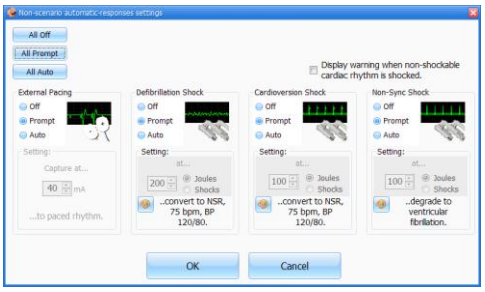
Please wait 30 seconds for the feature to initialize.

11. Enter the "Controller IP" and "port" number as shown on step 7 and click "Connect".

## AUTO RESPONSES

The Non-Scenario Automatic Response feature allows the facilitator to set preprogrammed responses to electrical therapy events. When the electrical therapy is detected, auto-responses can automatically load a specific palette item or prompt the facilitator before making preprogrammed changes to the simulator's vital signs. Non-scenario response settings only detect electrical therapy administered when a scenario is not in progress. For information on how to configure auto-responses for scenarios, go to page 39. To activate the virtual shock panel, go to page 85.

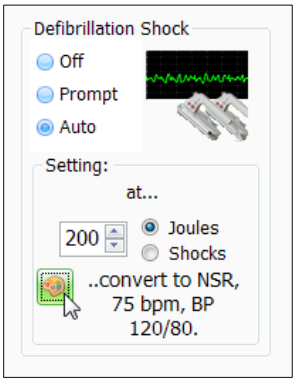
**Warning:** Do not defibrillate or pace Premie HAL with real medical equipment. Doing so will result in damage to the simulator's internal components.



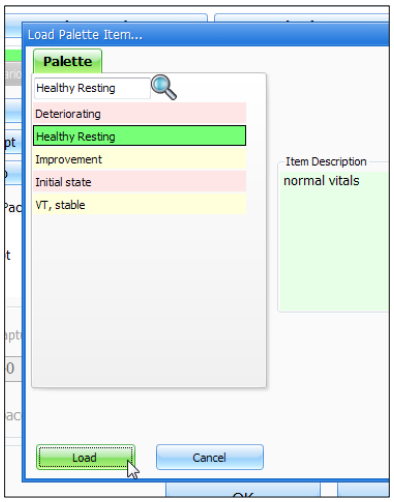

The behavior of each auto response option is explained below.

- Off - The software does not respond to the electric therapy
- Prompt - The software detects the electrical therapy and prompts the facilitator before applying the changes configured in the "Settings" section.
- Auto - The software automatically detects the electrical therapy and compares it to a threshold selected by the provider. If the threshold is met, the vitals will automatically change to the parameters specified on the "Settings" section.

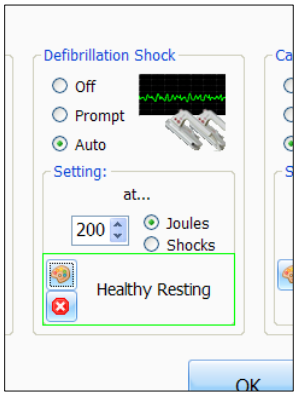
Each type of electrical therapy has a unique set of default parameters. For example, the default response to a virtual defibrillation Shock applies the following vital sign parameter changes: NSR, 75 bpm, BP 120/80. Click on the palette button to program a specific palette item as the auto-response.



The “Load Palette Item” window is displayed. Select the desired palette and click “Load”.




The desired palette is now displayed in the “Setting” section.

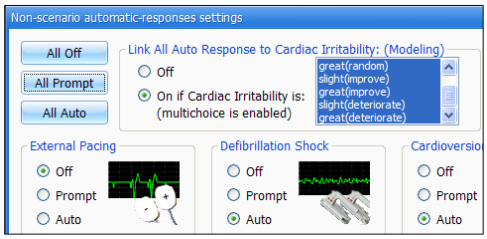



The auto-response is now configured to automatically apply the “Healthy Resting” palette if a virtual defibrillation shock of 200 Joules or greater is detected.

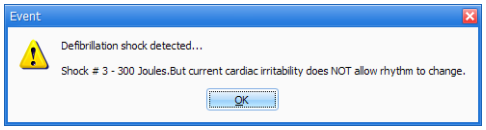
## AUTOMATIC MODE NON-SCENARIO AUTOMATIC RESPONSES

The additional auto-responses listed below are unique to the automatic mode.

Link All Auto Response to Cardiac Irritability - Auto-responses will work only if the cardiac irritability option on the details page matches the selection on this window.

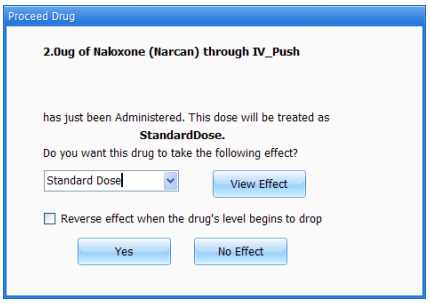



The following message is displayed if electrical therapy is detected and the cardiac irritability on the details page does not match the selection on the responses window.


Event
Defibrillation shock detected...
Shock # 3 - 300 Joules.But current cardiac irritability does NOT allow rhythm to change.
OK

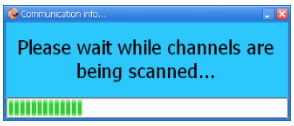
Drug Model Effect – Configure the auto-response behavior when the administration of a medication is detected.

- Auto – Apply the drug effects based on medication’s programmed properties and dosage.
- Prompt – Display a confirm prompt before applying the drug’s effects.

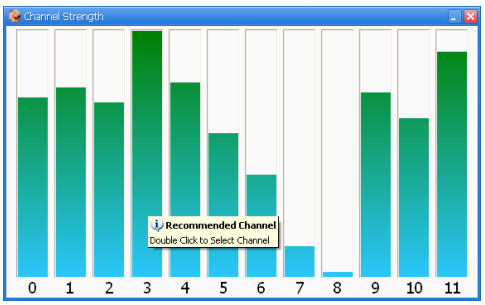

Proceed Drug
2.0ug of Naloxone (Narcan) through IV_Push
has just been Administered. This dose will be treated as
StandardDose.
Do you want this drug to take the following effect?
Standard Dose
View Effect
Reverse effect when the drug's level begins to drop
Yes
No Effect

## SCAN RF CHANNELS

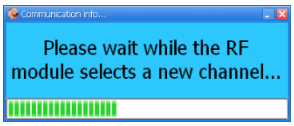
Manually select the best possible RF channel for tablet-simulator communications by selecting “Setup”, then “Scan RF channels”. The following notice displays while the scan is in progress:




When the scan is complete, a series of bars will display, with the highest bar indicating the best signal. On mouseover, a popup will display “Recommended Channel” over the channel bar with the best measured signal. The other bars will only display a “Double Click to Select Channel” message.



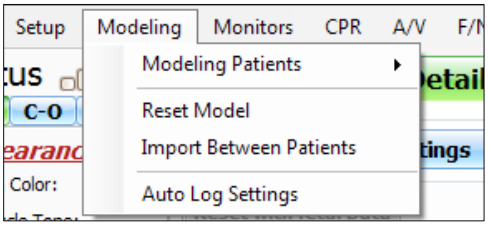

Click on the recommended channel in the graph to select it. The following message will display while the command is processed.




The new channel should subsequently ensure four solid bars display in the communications indicator at the top of the Status bar.

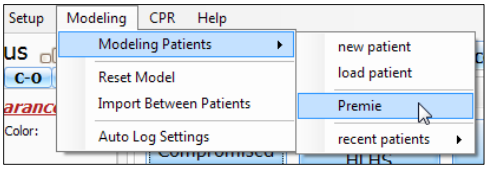
# Modeling (Automatic Mode Only)

The “Modeling” drop down menu in the top left corner of the GaumardUI contains four options: Modeling Patient, Reset Model, Import Between Patients, and Auto Log Setting.

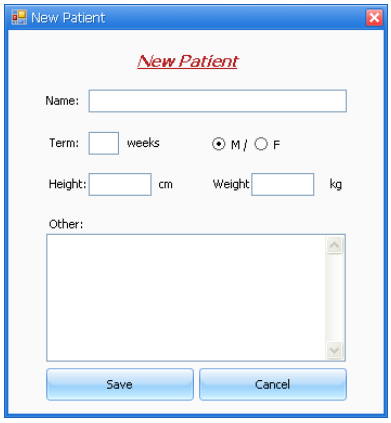



## MODELING PATIENT

This option allows you to create a new patient or load an already existing one.

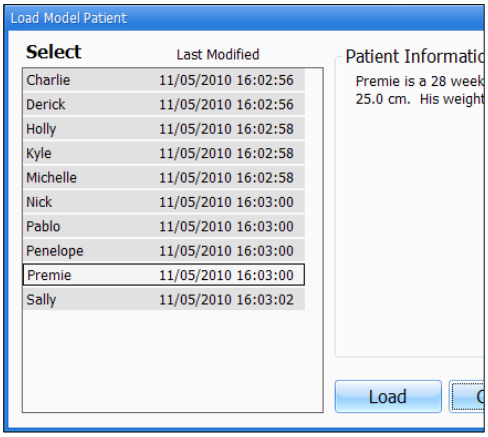



To create a new patient, go to Modeling, Modeling Patient, new patient. The following dialog box is displayed:




Enter the name of the patient, age, gender, height, weight and/or additional notes. Then, click “Save”.

To load an already existing patient, go to Modeling, Modeling Patient, Load Patient.




Select the desired patient, and click on Load. Notice that the factory pre-set patient Premie cannot be deleted, as opposed to any of the patients that you create yourself, which can be deleted.

Patient information is displayed on the right side and near the top of the Details tab.

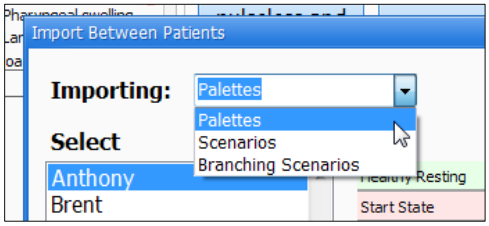
## RESET MODEL

Clicking on Reset Model under the Modeling drop down menu, will restore all vitals and physiologic controls to normal state. For instance, if the ECG rhythm is currently on Ventricular Fibrillation, clicking on reset model changes the ECG rhythm back to sinus.

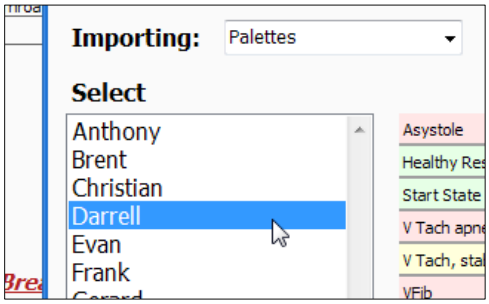
## IMPORT BETWEEN PATIENTS

Use the “Import between patients” menu to import palettes, scenarios, and branching scenarios from other patient profiles into the current active one.

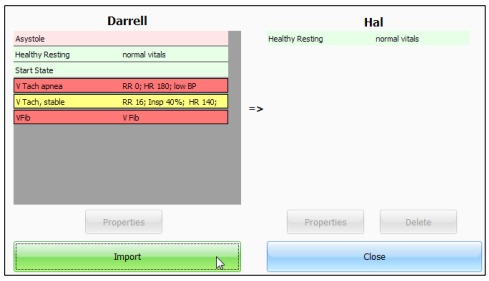
To begin, select the item category to import.




Then, select the patient name that contains the items that will be imported into the active patient.



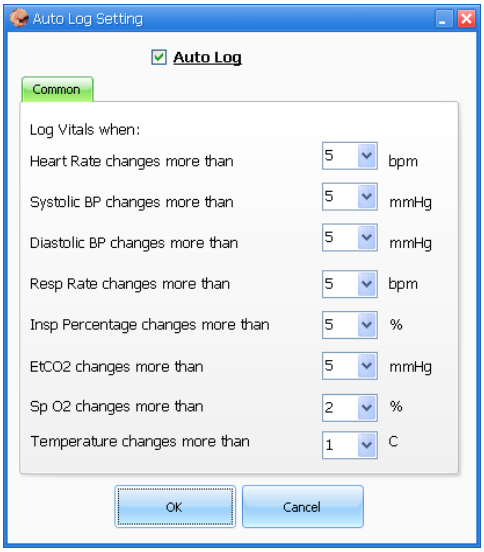

For this example, select one or more palettes to import from the list and click “Import”.




The palettes are now imported and saved into the HAL patient.

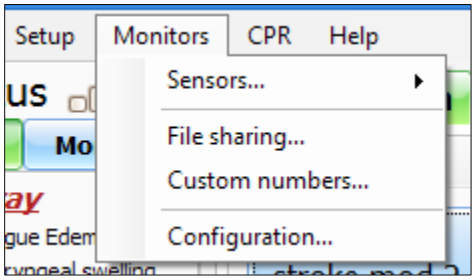
## AUTO LOG SETTING

This menu option is used to specify various vitals to be logged automatically after reaching a specific threshold.


Auto Log Setting
Auto Log
Common
Log Vitals when:
Heart Rate changes more than 5 bpm
Systolic BP changes more than 5 mmHg
Diastolic BP changes more than 5 mmHg
Resp Rate changes more than 5 bpm
Insp Percentage changes more than 5 %
EtCO2 changes more than 5 mmHg
Sp O2 changes more than 2 %
Temperature changes more than 1 C
OK
Cancel

# Monitors

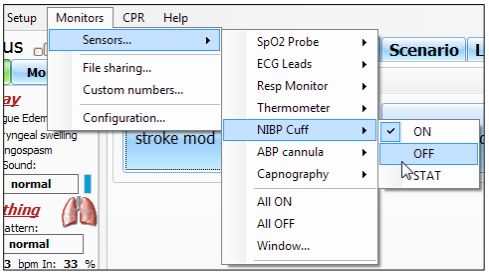
Use the Monitors drop down menu to enable/disable sensors on the virtual monitor screen, share files, program custom scalars, and verify the connection between the GaumardUI and Gaumard Virtual Monitor software. For detailed instructions on how to configure and connect the Gaumard Vital Signs Monitors, refer to the Gaumard Monitors User Guide.




**If the Monitors menu option is not shown, go to Setup> Options> Premie HAL Add-Ons and enter the virtual monitors activation code. For more information go to page 85.**

## SENSORS

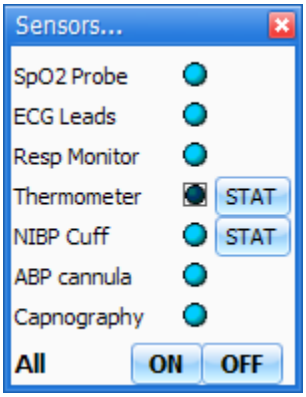
Use the sensors option to enable or disable any of the waveforms displayed in the vital signs monitor. Select the waveform and click “ON” to display the readings on the virtual monitor screen. To disable a parameter reading, click “OFF”. The vital signs monitor sensors defaults to “All On.”




Some sensors, such as NIBP and Thermometer are equipped with a STAT control that will allow the facilitator to activate readings on the virtual monitors from the controller software.

## SENSOR CONTROL WINDOW

The sensor control window is a floating panel with on/off toggle controls. Click Monitors> Sensors> Window to open the floating sensor control panel.



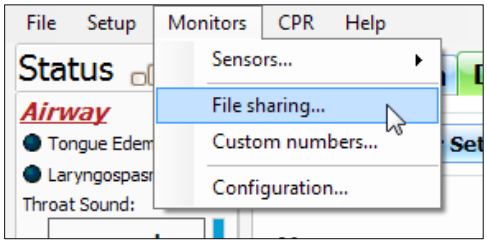

Single click the circular icon to enable or disable the sensors displayed on the virtual monitor screen. Click the circle dark to disable the sensor and light blue to re-enable it. In the example above, all the sensors are on except the thermometer.

## FILE SHARING

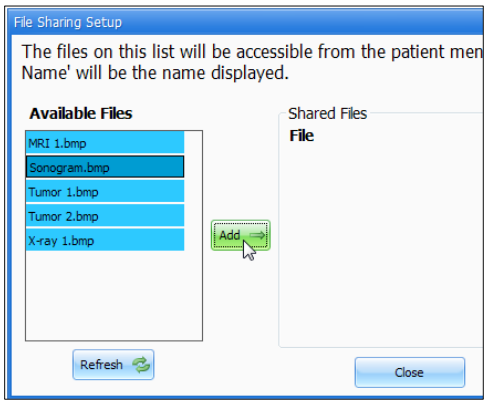
The file sharing menu allows the facilitator to send images, audio, and text files to the virtual monitor screen. Use the “file sharing” feature to fulfill laboratory reports and x-ray requests by the provider during simulation.

To begin, first add the mock image (.jpg, .bmp) or text files (.txt) into the Gaumar_UI folder located on the home screen of the control computer.

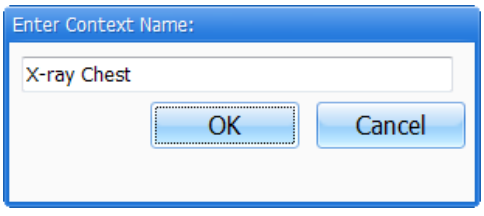
On the GaumardUI menu bar, click Monitors>File sharing, to open the "File Sharing Setup" menu.



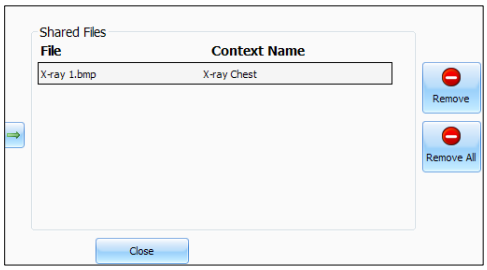

The "File Sharing Setup" menu is used to manage files shared with the virtual monitor software. The list of files stored on the Gaumard_UI folder available for sharing is displayed on the left panel. To share a file, first select the file from the left panel and click the "Add" button.



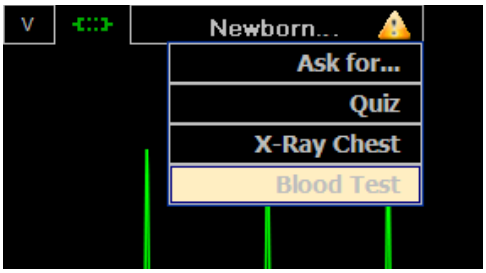

Enter a context name on the pop-up menu and click "OK" to share.



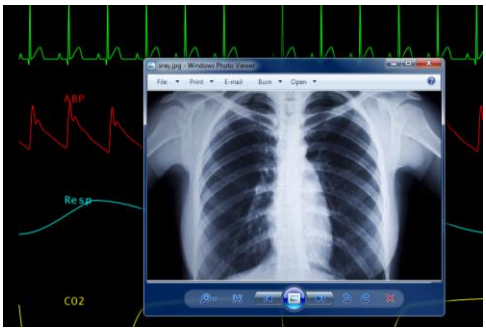

Files currently shared are listed on the "Shared Files" list.




Once a file is added to the "Shared Files" list, a yellow notification icon is shown on the patient menu at the top left of the virtual monitor screen. The icon notifies the provider that a file is available for viewing. Click on the patient name button to bring down the selection of available files and select the context name to open.




The x-ray file is now open.

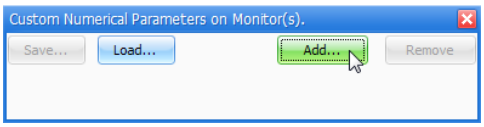


To troubleshoot file sharing access errors go refer to the Gaumard Monitors Guide.

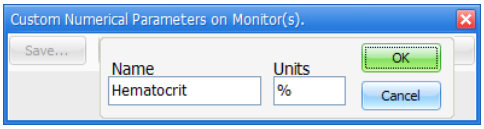
## CUSTOM NUMBERS

Use the custom numbers menu to add custom numerical parameters to the virtual monitor main screen, such as a glucose levels or a platelet count.

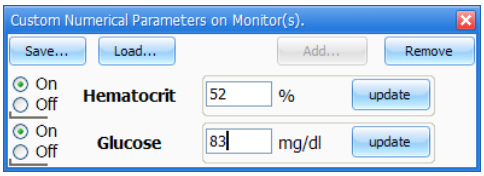
On the GaumardUI menu bar, click Monitors>Custom Numbers, to open the “Custom Numerical Parameters on Monitor” menu. Click the “Add” button to create a new parameter.



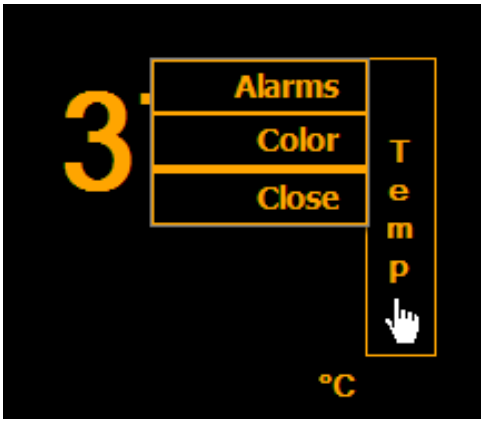

Type the name and units of the new parameter and then click “OK”.



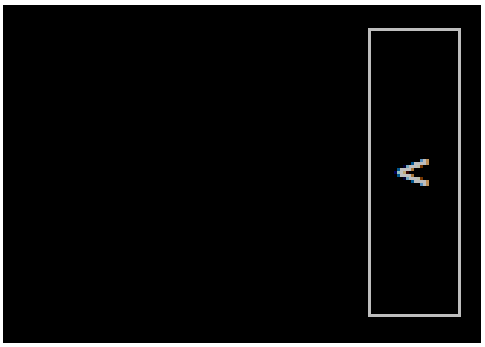

The scalar parameter is now created. Enter a value for the parameter and click “Update”.



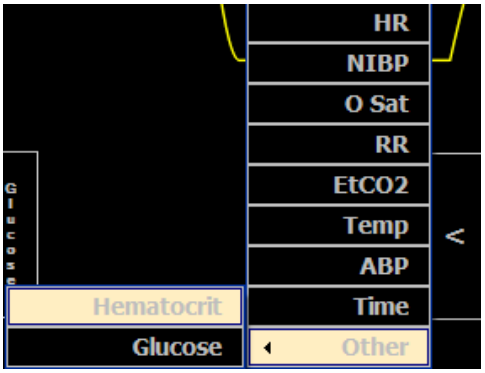

On the virtual monitor screen, click on a scalar’s menu and select “Close” to make the entry available for the custom parameter.




The scalar entry is now a blank field.



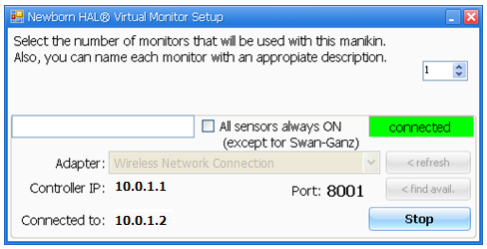
Click on the empty scalar menu and select “Other” from the list of available scalar parameters. Select the name of the custom parameter.




The figure below shows two new values: Glucose level and hematocrit levels. Return to the custom parameter menu on the GaumardUI software to update the values when necessary.

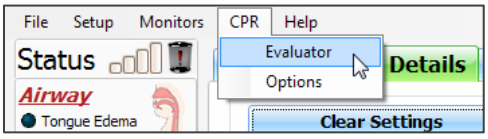
## CONFIGURATION

On the GaumardUI menu bar, click Monitors>Configuration, to open the virtual monitor setup window. Use the virtual monitor setup window to verify the connection between the GaumardUI software and the Gaumard Monitors vital signs software, re-configure the communication ports and view the controller IP address. To troubleshoot connectivity issues, go to page 121.

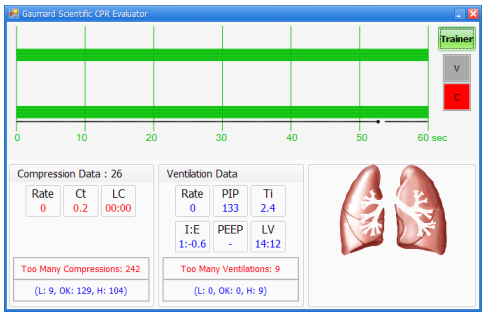



# CPR

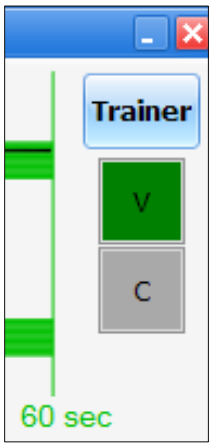
GaumardUI features a CPR performance evaluator and trainer. On the menu bar, click CPR>Evaluator to access the CPR Evaluator window.




The CPR evaluator feature provides real time feedback on the provider's compression and ventilation performance.

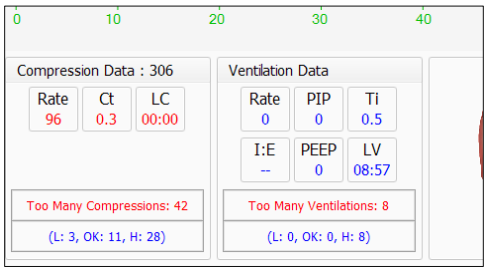



The provider performance indicator boxes are located on the right. The V (ventilation) and C (compression) box fill color changes between the following states:




- **Grey** – No intervention was detected.
- **Yellow** – Compression was too shallow. Ventilation was too weak.
- **Green** – Compression/ventilation was performed correctly.
- **Red** – Compression was too deep. Ventilation was too strong.

Compression and ventilation data is displayed at the bottom of the window as CPR is performed by the provider.




Compression Data

- **Rate** – Rate of compressions in real time.
- **Ct** (Compression time) – Average length of each compression in seconds.
- **LC** (Last Compression) – Time elapsed since the last compression performed.

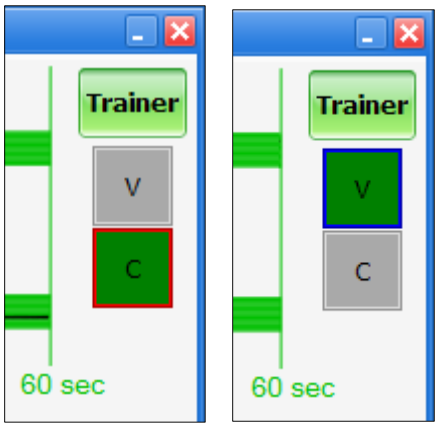
Ventilation Data

- **Rate –** Ventilation rate in real time.
- **PIP –** (approx.) Peak Inspiratory Pressure
- **Ti –** Time Inspiration

- **I:E –** Inspiratory: Expiratory Ratio
- **PEEP -** (approx.) Positive end-expiratory pressure.
- **LV** (Last Ventilation) **–** Time elapsed since the last ventilation performed.

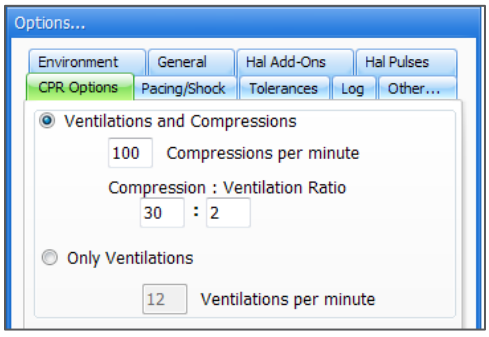
## TRAINER

The CPR trainer reference boxes generate a visual prompt of the compression to ventilation ratio programmed in the "CPR Options" menu. Click the "Trainer" button to start. The V (ventilations) and C (compressions) box borders blink to indicate the correct reference CPR rate.



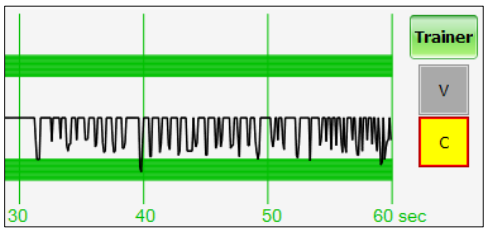

## CPR OPTIONS

By default, the CPR trainer is configured to blink the reference borders at a 30:2 compression to ventilation ratio. To change the ratio, navigate to the menu bar and click the CPR dropdown and CPR Options.

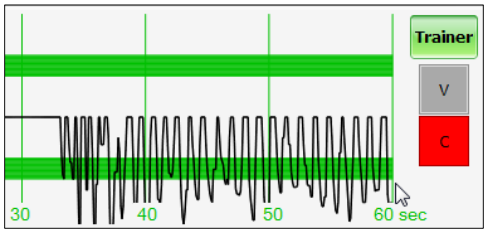



## PERFORMANCE EXAMPLES

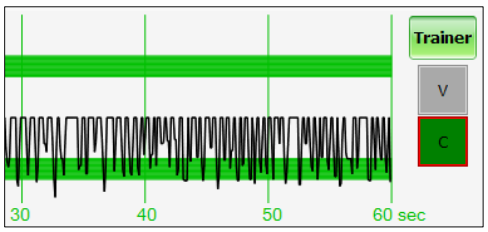
Compressions are too shallow. Waveforms mostly do not reach the green zone. Compression indicator is yellow.



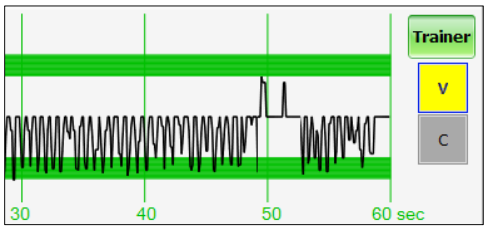

Compressions are too deep. Waveforms mostly exceed the green zone. Compression indicator is red.



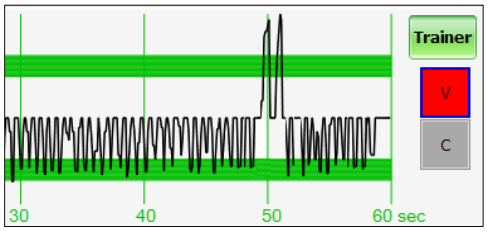

Compressions are performed correctly. Waveform peaks are mostly inside the green zone.



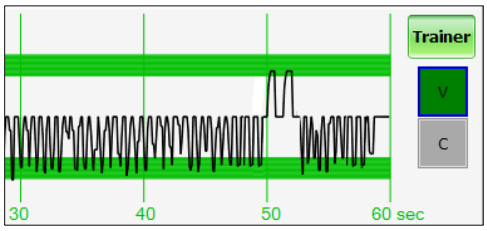

Ventilations are too shallow. Waveform peaks do not reach the green zone.




Ventilations are too strong. Waveform peaks exceed the green zone.

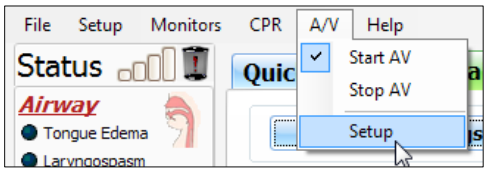


Ventilation was performed correctly. Waveform peak is inside the green zone.

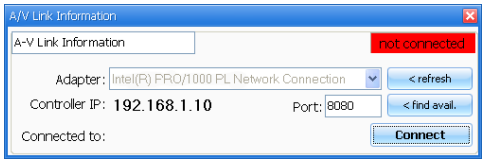



## A/V

GaumardUI is capable of interfacing with a number of third-party A/V recording systems that enable the capture of Audio and Video interlaced with the events recorded in the software log. To enable the A/V menu, go Setup>Options>Other, and checkmark “Use A/V system.”




Click Setup to open the configuration window. Configure the communication adapter and port number to send log information to a third party recording system. In order to set up the connection on the A/V System side, please consult your A/V System’s documentation.

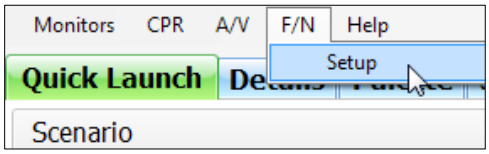



## Fetal Neo Link (Automatic Mode)

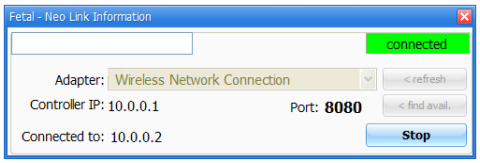
The Fetal Neo Link feature automatically transfers fetal vitals to the Premie HAL tablet, once a labor scenario is complete. To configure this feature, follow the steps below to establish a connection between the NOELLE Model and the Premie HAL model.

## NOELLE GAUMARDUI CONFIGURATION (AUTOMATIC MODE)

On the menu bar, click FN> Setup. If the menu is not shown, click Setup> Options>Other and checkmark “Use fetus – Neonate Link”

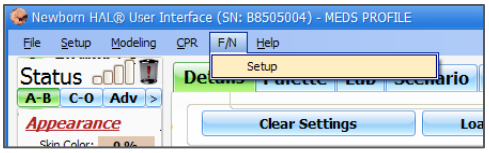



Click find available to find an available communication port. Alternately, assign a port manually, then click connect. The status will not read connected until the F/N configuration is completed on the Premie HAL tablet.

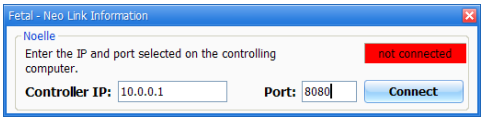



## PREMIE HAL GAUMARDUI (AUTOMATIC MODE)

Access the F/N setup menu on Premie HAL tablet. If the menu is not shown, click Setup>Options>Other and checkmark “Use fetus – Neonate Link”




Enter the IP address of the NOELLE tablet and matching port number and click connect.




Once the connection is established the system is ready to transfer the information between computers.

## USING THE NEO LINK

After the NEO LINK connection is established, the fetal vital information will be automatically sent to the Premie HAL tablet when a labor scenario is complete. The Data Received window prompts the facilitator to accept the incoming neonatal vital information from the NOELLE model. Click Yes to load the information onto the Premie HAL tablet and continue the scenario.

# Help

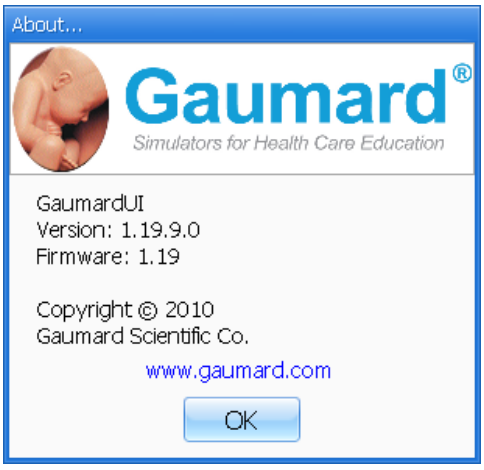
On the menu bar, click the “Help” option to perform the following options.

## GUI HELP

GUI Help option opens a digital copy of the simulator’s User Guide.

## ABOUT GUI

Click “About GUI” for information on the GaumardUI software version and the simulator’s firmware revision.




## CHECK FOR UPDATES

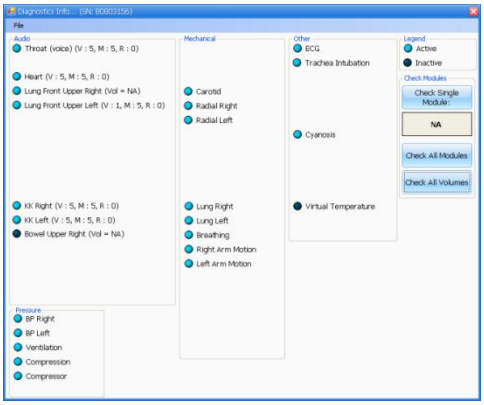
Redistributable GaumardUI installer files are available for download at http://www.gaumard.com/software-updates/. Follow the steps below to check for software updates using the built in update feature.

1. Connect an Ethernet cable to the laptop PC.
2. Go to the Help menu, and click on Check for Updates. The GaumardUI automatically starts searching for available updates.
3. Click “Install” to begin the update. The download progress bar begins to auto-fill as the setup file is downloaded.

   Upon completion, the software automatically launches the setup wizard.
4. Click “Next”, and follow the wizard instructions to complete the software download.

## DIAGNOSTICS

Use this feature as a troubleshooting tool to verify the status of the simulator’s features. For more information on using the diagnostics screen for troubleshooting, go to page 124.



# Working with Premie HAL

**Disclaimer: The content of this table are subject to change without prior notice. Please contact Gaumard Scientific for the most current information.**

| Category | Simulator Feature | | |
|---|---|---|---|
| **Airway** | Nasal Intubation | | |
| | Oral Intubation | | |
| | Breathing/Airway Sounds | | |
| | Suction exercises | | |
| **Breathing** | Automatic Chest Rise | | Independent chest rise |
| | Lung Sounds | | |
| **Cardiac** | Heart Sounds | | |
| | ECG generated in real time | | 4 patches |
| | Chest compressions sensor | | |
| **Circulation** | Bilateral IV | | |
| | Pulses | | Fontanel, Brachial, Umbilical, Femoral |
| | Cyanosis | | |
| **Systemic** | Pedal Vein (left) | | |
| | Frog legs position | | |
| | Intraosseous access | | |
| | Temperature sensor | | |
| **Other** | Physiologic Model | Optional | |
| | ETC Pro+ | Optional | Audio/Video recording and debriefing |
| | Gaumard Virtual Monitor | Optional | |

# Airway

## ORAL AND NASAL INTUBATION

Premie HAL's airway can be intubated orally using LMA or endotracheal tubes. Intubate nasally using a nasogastric tube for placement exercises.

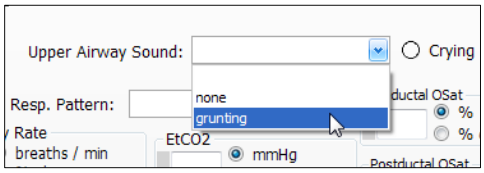
| Procedure | Recommended Device Size |
|---|---|
| **Intubation (Blade size)** | Miller 0 |
| **LMA** | Size 1 |
| **Nasal Intubation** | 8 Fr catheter |
| **Oral Intubation** | ETT 2.5 no cuff, 6 Fr suction catheter |

**Warning:** Always lubricate tubing, airway, and nasal opening prior to performing any nasal or oral intubation. Failure to do so will make intubation very difficult and is likely to result in damage.

Do not insert liquids or spray silicone oil into the mouth and airway.

## AIRWAY SOUNDS

Use the Detail tab parameter controls to change the upper airway sounds on the simulator.



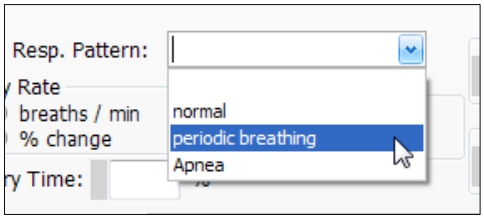

## SUCTION

Simulate suction technique.

# Breathing

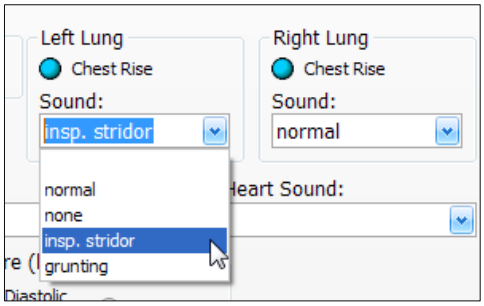
## RESPIRATORY PATTERN

Use the Detail tab parameter controls to change the simulator's respiratory pattern.



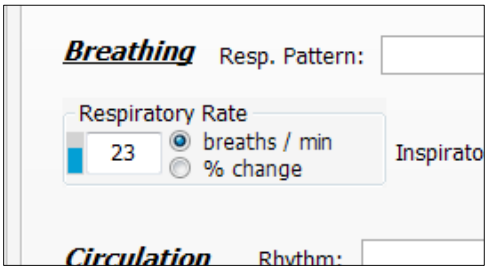

## LUNG SOUNDS

Use the Detail tab parameter controls to change the audible respiratory sounds on the simulator.

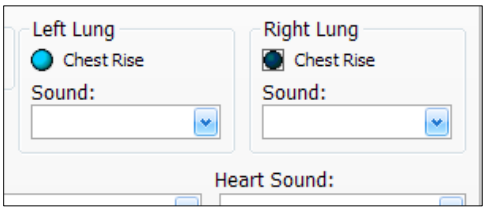


## BILATERAL CHEST RISE

Set the respiratory rate higher than zero to enable automatic bilateral chest rise and fall.




Disable the right or left lung individually.



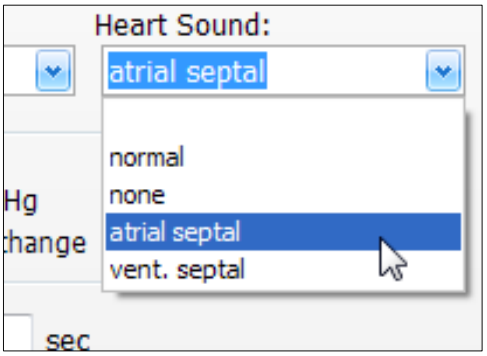

## PULMONARY VENTILATION

Ventilate the simulator using a bag valve mask or a mechanical ventilator. Set the respiratory rate to “0” to display chest rise during ventilation and receive feedback on the CPR window. For more information on the CPR trainer, go to page 95.

# Cardiac

## HEART SOUNDS

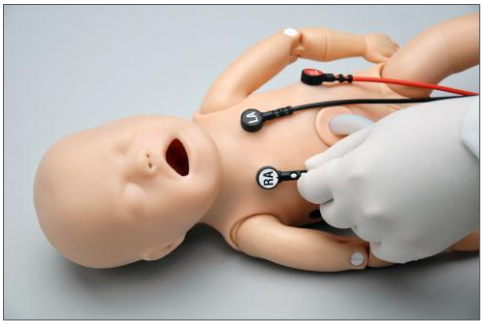
Use the Detail tab parameter controls to change the audible heart tones on the simulator.




Heart sounds are synchronized with the heart rate and selectable cardiac rhythms.

## ECG MONITORING AND ELECTRICAL THERAPY

Conductive skin sites allow the attachment of real EKG electrodes. This feature permits the provider to track cardiac rhythms with real medical equipment just like with a human patient.



Use the virtual shock panel to simulate the administration of electrical therapy via software. To enable the virtual shock panel feature, go to page 85.

**Warning:** Do not physically pace or defibrillate Premie HAL with real medical equipment. Doing so will damage the electrical components.

## CHEST COMPRESSIONS

From the CPR trainer window, monitor the cadence and force of chest compressions applied by the provider. For more information on the CPR trainer, go to page 95.

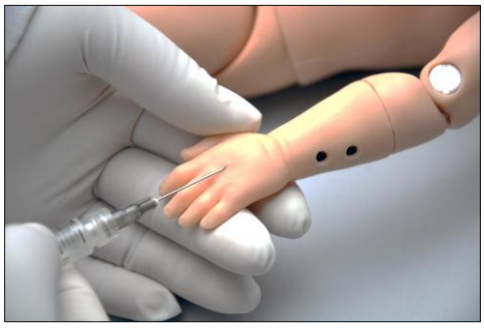
# Circulation

## PALPABLE PULSES

Palpable pulses (fontanel, brachial, umbilical, and femoral) are dependent on blood pressure.

## INTRAVENOUS ACCESS

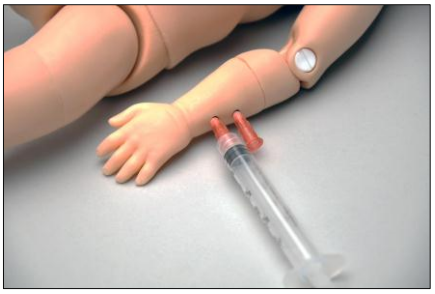
Bilateral IV training arms allow for intravenous infusions as well as drawing fluids. Use a flashlight to detect veins in the dorsum of the hand.



**Warning:** Use only Gaumard's provided simulated blood. Any other simulated blood brand containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

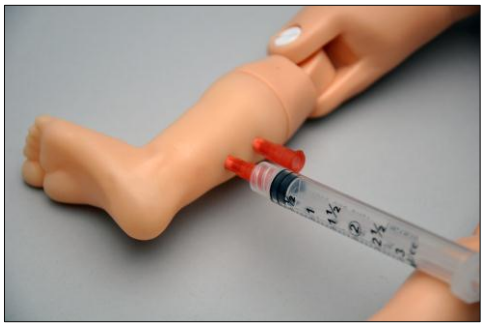
Follow the steps below to fill the IV vasculature for drawing fluids.

1. Fill the modified syringe with water or diluted Gaumard simulated blood.
2. Connect the syringe into the fill port and the drain connector to the drain port as shown.



3. Slowly push the fluid into the IV circuit until it begins to flow out of the drain connector.
4. Remove the fill syringe and drain connector. The self-sealing ports will keep the fluid inside the veins.

Repeat the procedure to fill the IV vasculature on the lower leg. Use a flashlight to detect veins.



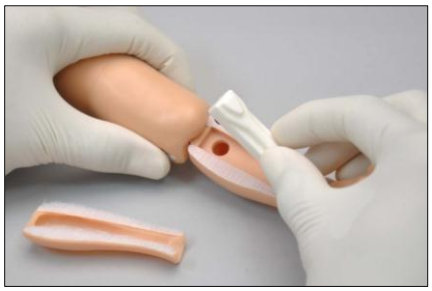
**For simulation of high volume infusions, it is necessary to leave the drain tube attached and run it to a suitable outlet or container.**

## INTRAOSSEOUS ACCESS

Establish intraosseous infusions access to administer fluids and medications. To use this feature, follow these simple steps:

1. Remove the skin from the leg to access tibia bone insert.

2. Lift the tibia insert out of the holder.

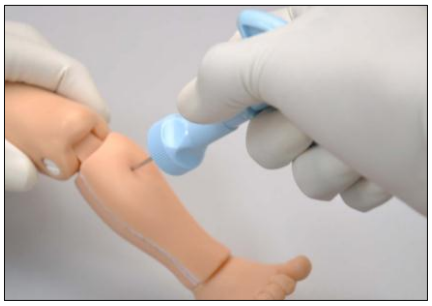


3. Hold the tibia bone vertically and inject 2cc of fluid through the rubber stopper. Air and excess fluid are purged through the vent port near the top of the bone.

4. Insert the fluid filled bone back into the holder.

5. Replace the skin and palpate tibial tuberosity.

6. Insert the IO device into the tibia bone to perform an exercise. Notice the decrease in needle resistance as it passes into the bone marrow cavity. Remove stylet, aspirate bone marrow, and infuse fluids.



Following the procedures, aspirate infused fluids using an empty syringe through the rubber stoppers. To extend the life of each bone insert, seal puncture marks with cement glue and leave to dry before re-inserting them into the holder.

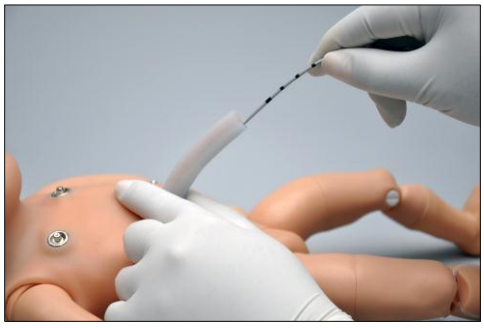
# Systemic

## CYANOSIS

Control and program the visible cyanosis on the simulator. Use the Model tab to automate the change in cyanosis as the provider performs CPR intervention. For more information on the Model feature, go to page 95.

## CATHETERIZATION

Catheterize or inject the umbilical cord. To fill the umbilical cord with fluid, inject any of the three blood vessels with 2 mL of water using the syringe. For catheterization exercises, use a 6 Fr urethral round tip catheter lubricated with silicon oil.



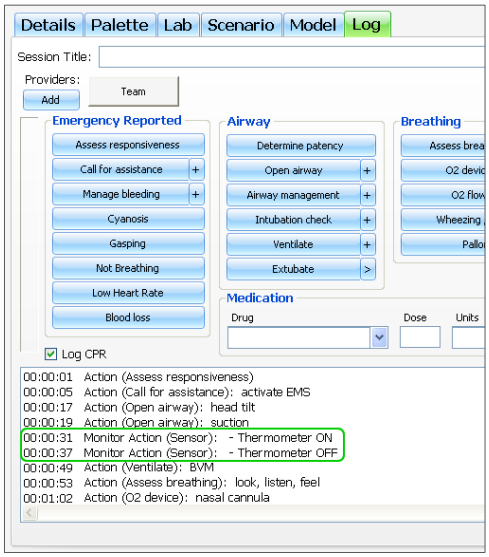
The replaceable umbilical cord can be trimmed or cut. Before removing or replacing the umbilical cord after an exercise, turn off the simulator by exiting the software (File>Exit), or set the simulator on STAND-BY mode. After the simulator is powered down, the umbilical cord can be safely unplugged. For information about ordering replacement umbilical cords, go to page 125.

**Warning:** Do not remove umbilical cord while Premie HAL® is in operation. To remove the umbilical cord, first turn the simulator off (by clicking on File, Exit on the GaumardUI software), or set the manikin on STAND-BY mode. Replacement of cords should also be done while the manikin is turned off or set on STAND-BY mode.

## TEMPERATURE PROBE

The temperature reading on the vital signs monitor is displayed when a temperature probe is placed on the lower right quadrant of the abdominal area.

To enable the temperature sensor detection feature, go to Setup>Options>Neonate features Tab. Checkmark “Use temp. sensor” and click OK to save. The log panel detects the placement of the sensor.

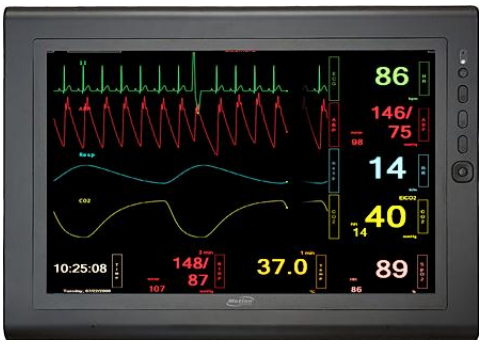


# Other

## VITAL SIGNS MONITOR (OPTION)

The Gaumard Monitors touchscreen display simulates the functionality of a patient vital signs monitor. Users can customize the type of waveforms and scalars displayed, set alarms, and display lab reports, x-rays, and other files for the provider to access during simulation.

The Gaumard Monitors vital signs system is available in a mobile and desktop solution.



For information on how to setup Gaumard Monitors with GUI, please refer to the help File included with the Gaumard Monitors software.

## PRO + (OPTION)

The Pro+ system is an all-in-one session recording and simulator control solution for facilitators in a lab or mobile environment. The built in GaumardUI software allows the facilitator to control Premie HAL while recording care provider interaction and event logs. The upgrade replaces the standard tablet with a convertible touchscreen laptop loaded with the Pro+ environment and GaumardUI, (2) WIFI enabled cameras, (1) motorized 180 view USB camera and carrying case.

For more information on using the Pro + system, refer to the documentation included with the upgrade option.

# Appendix

# More about Scenarios

## Factory Preset Scenarios

| | Scenario Title | Name | Scenario Type | Operating mode |
|---|---|---|---|---|
| **1** | Diabetic Mother | Diabetic Mother | Branching | Manual |
| **2** | Ductal Dependant Heart Lesion | HLHS | Linear | Manual |
| **3** | Group B Sepsis and Secondary Apnea | Group B Sepsis | Branching | Manual |
| **4** | Hyaline Membrane Disease | HMD | Linear | Manual |
| **5** | Meconium Aspiration and Pneumonia | Meconium Aspiration | Branching | Manual |
| **6** | Necrotizing Enterocolitis | NEC | Branching | Manual |
| **7** | Normal | Normal | Branching | Manual |
| **8** | Patent Ductus Arteriosus | PDA | Branching | Manual |
| **9** | Pneumothorax | Pneumothorax | Linear | Manual |
| | | **Meds Profile** | | |
| **1** | Adenosine OD | Adenosine OD | Linear | Automatic |
| **2** | Adenosine SD | Adenosine SD | Linear | Automatic |
| **3** | Adenosine UD | Adenosine UD | Linear | Automatic |

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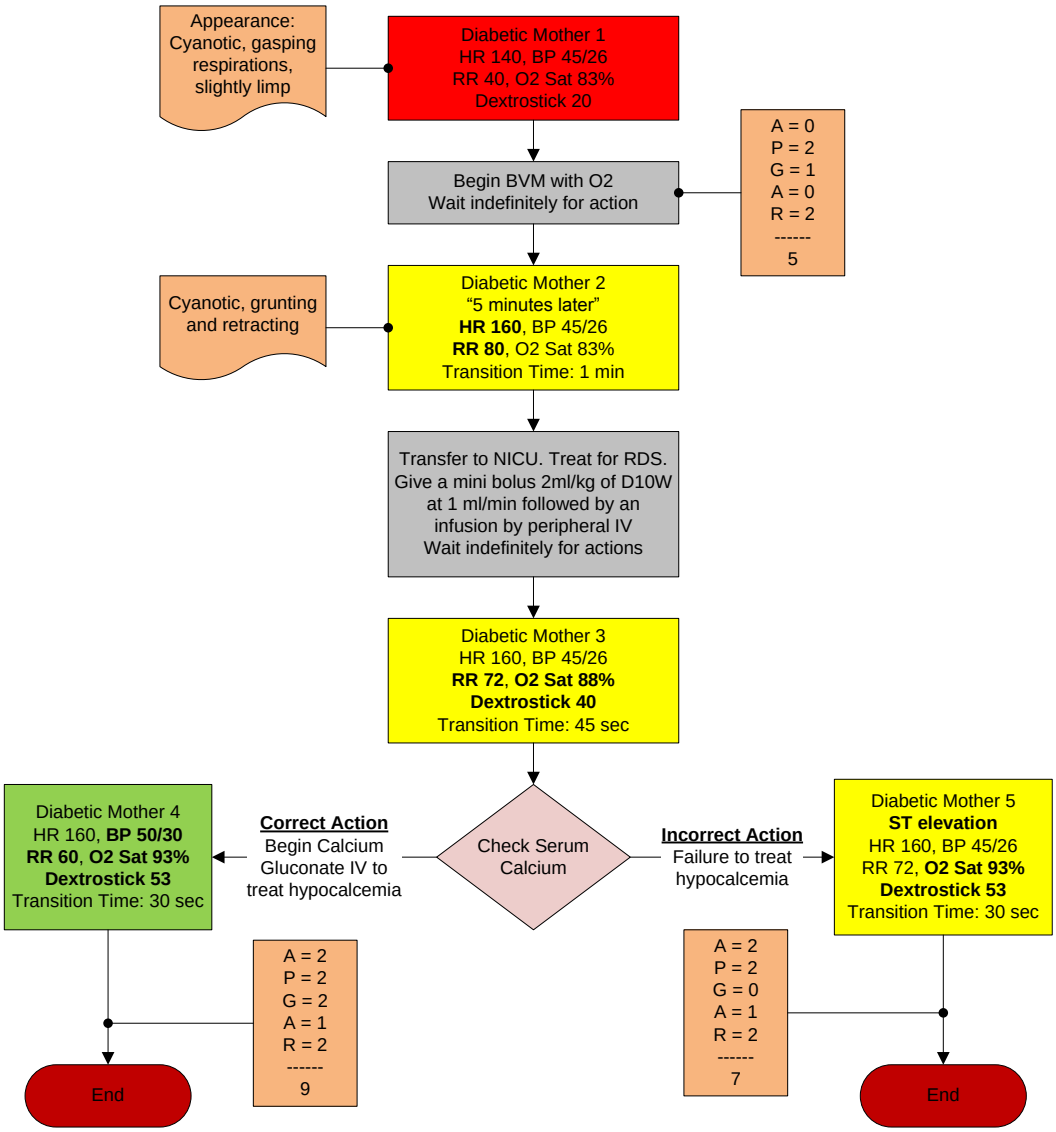
# Diabetic Mother

A thirty two week infant is born to a 23 year old insulin dependant mother who was diagnosed at age 21. She is classified as Type B and has been followed in the high risk clinic. Suction and stimulation have already been applied.



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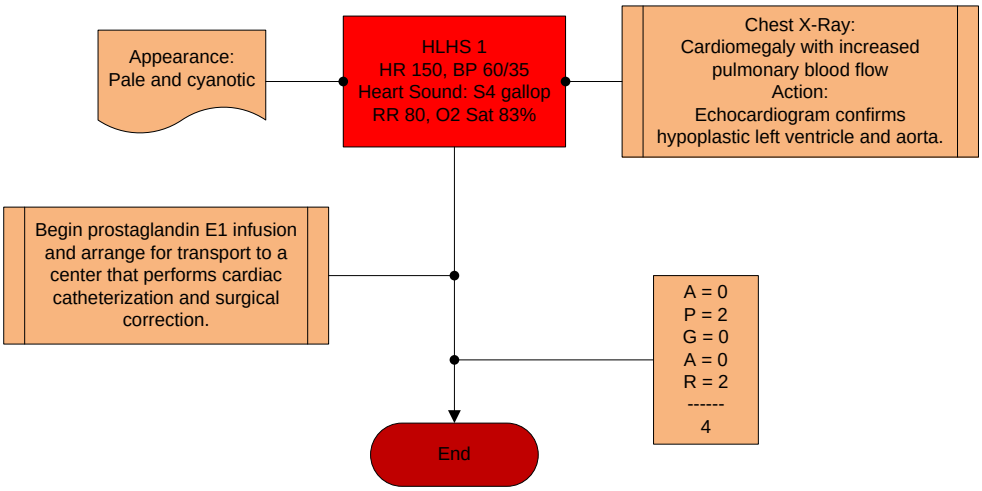
# Ductal Dependant Heart Lesion

## Hypoplastic Left Heart Syndrome

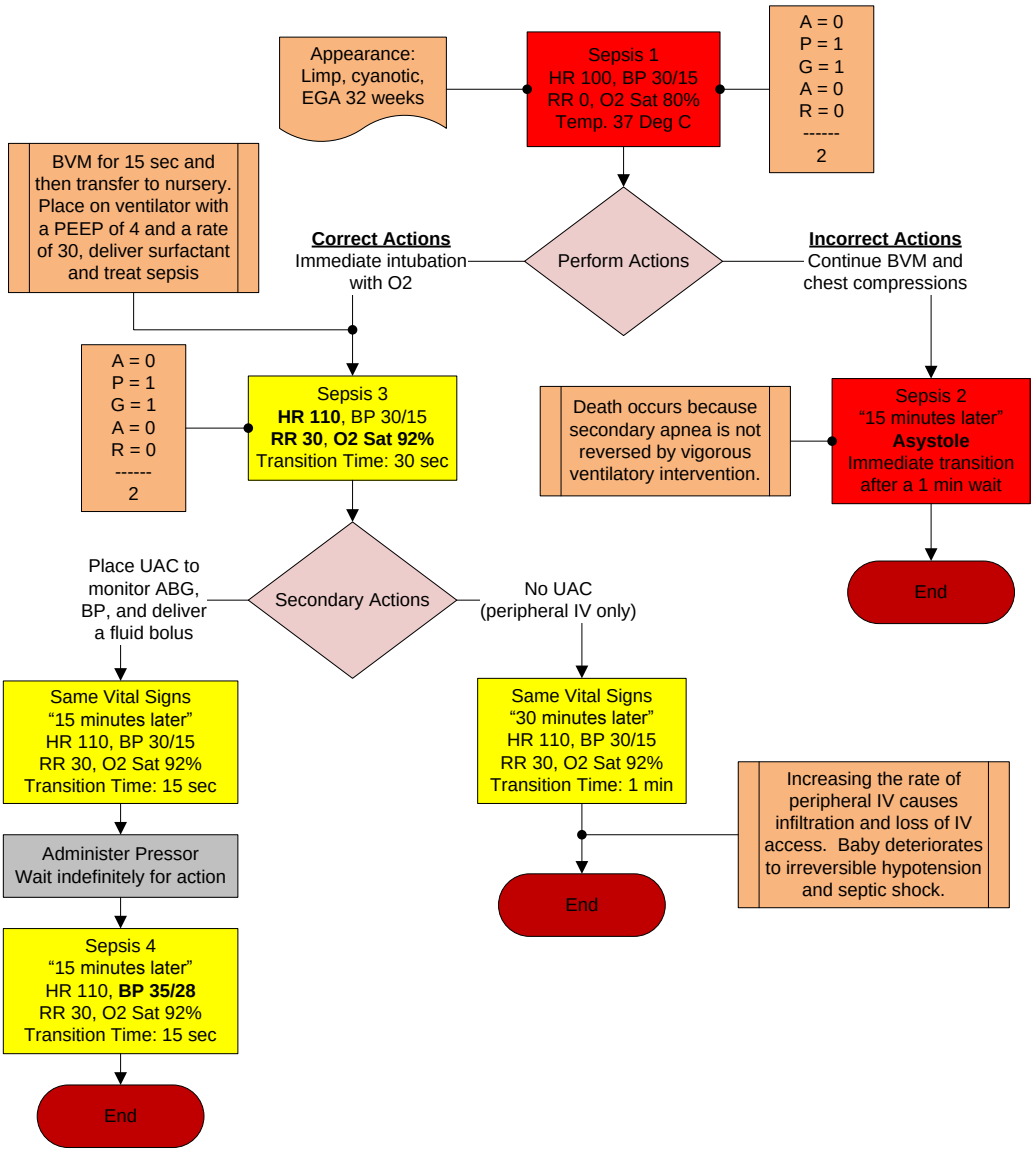
A 32 week premie remains cyanotic despite breathing 100% Oxygen



Premie HAL®

# Group B Sepsis and Secondary Apnea

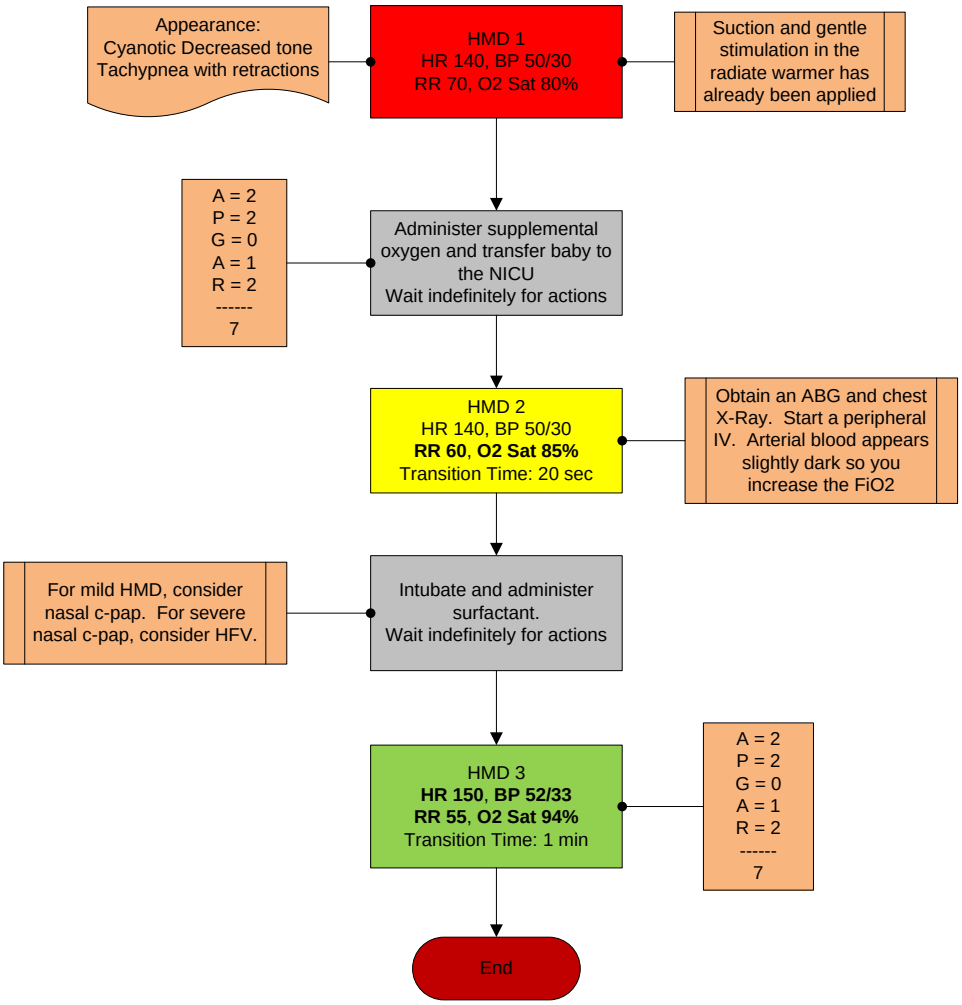
A mother with no prenatal care delivers a premature baby with foul smelling amniotic fluid in the emergency room. The baby is being bagged with O2.


Appearance: Limp, cyanotic, EGA 32 weeks
Sepsis 1
HR 100, BP 30/15
RR 0, O2 Sat 80%
Temp. 37 Deg C
A = 0
P = 1
G = 1
A = 0
R = 0
---
2
BVM for 15 sec and then transfer to nursery. Place on ventilator with a PEEP of 4 and a rate of 30, deliver surfactant and treat sepsis
Correct Actions
Immediate intubation with O2
Perform Actions
Incorrect Actions
Continue BVM and chest compressions
A = 0
P = 1
G = 1
A = 0
R = 0
---
2
Sepsis 3
HR 110, BP 30/15
RR 30, O2 Sat 92%
Transition Time: 30 sec
Death occurs because secondary apnea is not reversed by vigorous ventilatory intervention.
Sepsis 2
"15 minutes later"
Asystole
Immediate transition after a 1 min wait
End
Place UAC to monitor ABG, BP, and deliver a fluid bolus
Secondary Actions
No UAC (peripheral IV only)
Same Vital Signs
"15 minutes later"
HR 110, BP 30/15
RR 30, O2 Sat 92%
Transition Time: 15 sec
Same Vital Signs
"30 minutes later"
HR 110, BP 30/15
RR 30, O2 Sat 92%
Transition Time: 1 min
Increasing the rate of peripheral IV causes infiltration and loss of IV access. Baby deteriorates to irreversible hypotension and septic shock.
Administer Pressor
Wait indefinitely for action
End
Sepsis 4
"15 minutes later"
HR 110, BP 35/28
RR 30, O2 Sat 92%
Transition Time: 15 sec
End

Premie HAL®

# Hyaline Membrane Disease

A teenage mother with no prenatal care delivers a 1300g Infant in L/D


Appearance:
Cyanotic Decreased tone
Tachypnea with retractions
HMD 1
HR 140, BP 50/30
RR 70, O2 Sat 80%
Suction and gentle stimulation in the radiate warmer has already been applied
A = 2
P = 2
G = 0
A = 1
R = 2
------
7
Administer supplemental oxygen and transfer baby to the NICU
Wait indefinitely for actions
HMD 2
HR 140, BP 50/30
RR 60, O2 Sat 85%
Transition Time: 20 sec
Obtain an ABG and chest X-Ray. Start a peripheral IV. Arterial blood appears slightly dark so you increase the FiO2
For mild HMD, consider nasal c-pap. For severe nasal c-pap, consider HFV.
Intubate and administer surfactant.
Wait indefinitely for actions
HMD 3
HR 150, BP 52/33
RR 55, O2 Sat 94%
Transition Time: 1 min
A = 2
P = 2
G = 0
A = 1
R = 2
------
7
End

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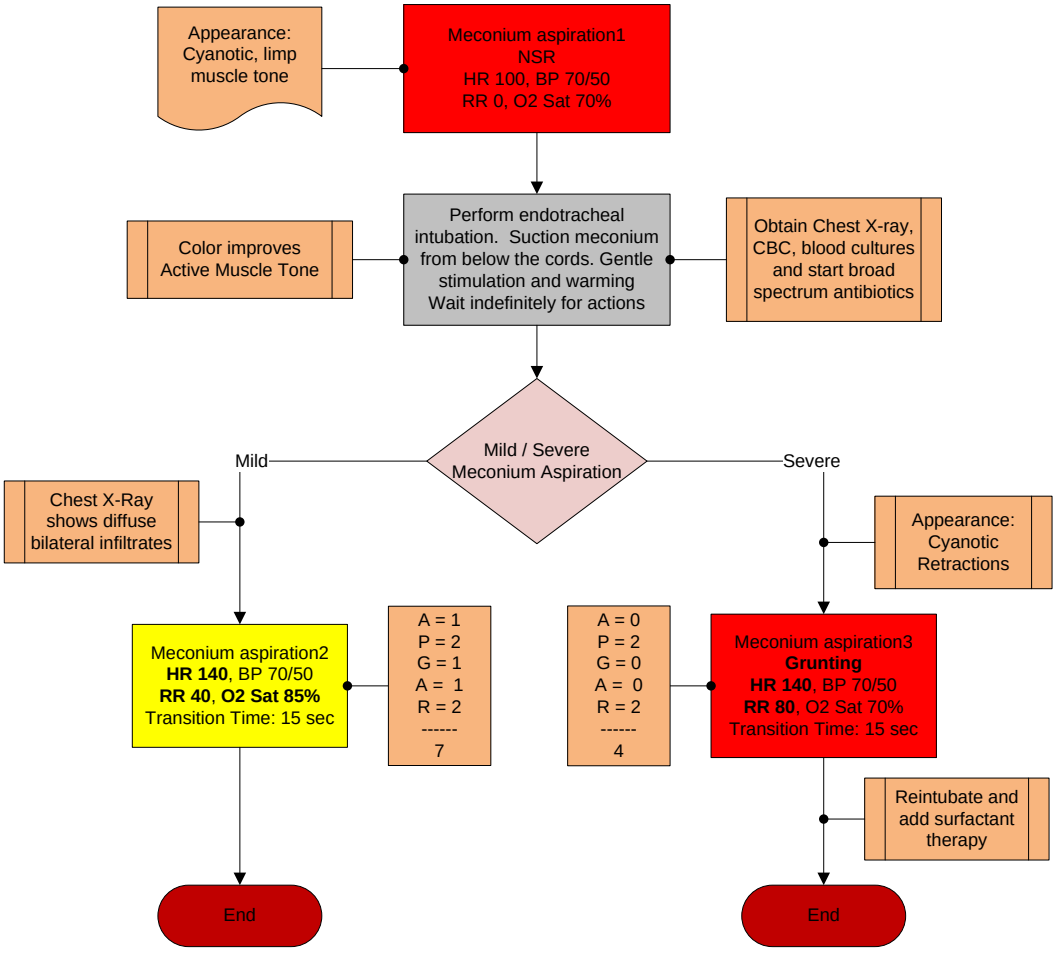
# Meconium Aspiration and Pneumonia

A thirty one week infant is delivered with thick meconium stained amniotic fluid.



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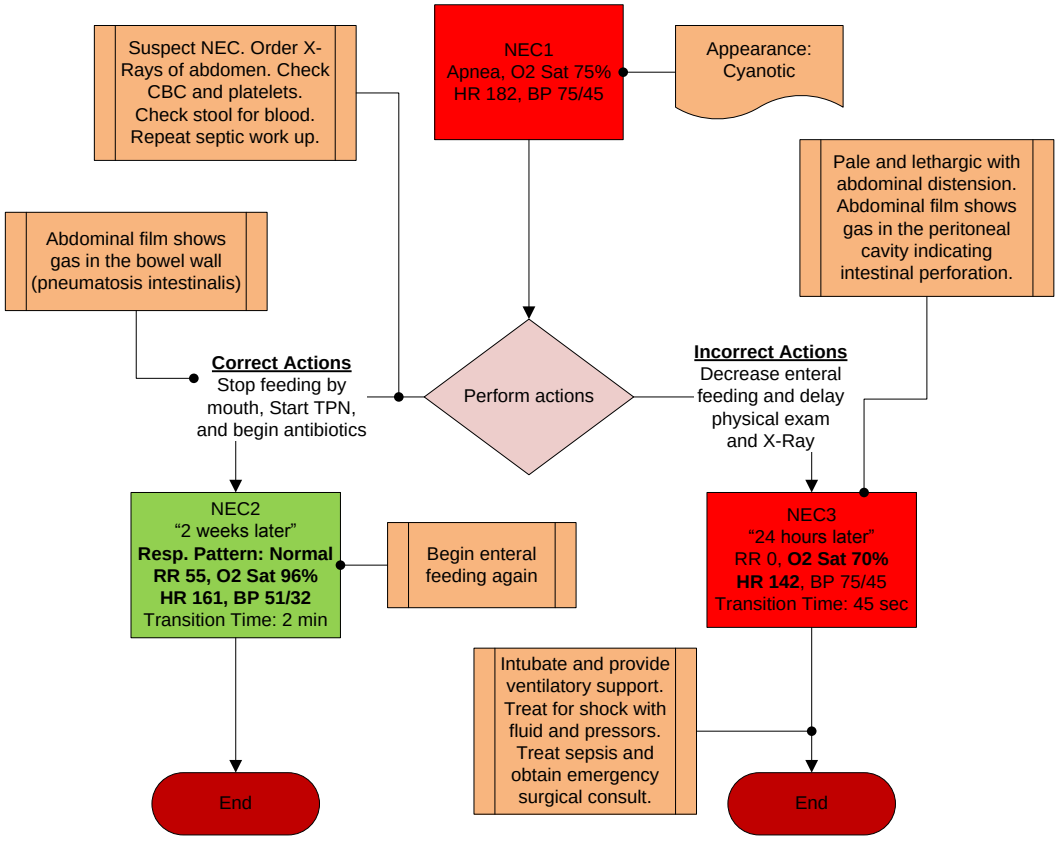
# Necrotizing Enterocolitis

A two week old premature infant began enteral feeds a week ago. He required some resuscitation at birth for perinatal asphyxia and received antibiotics for possible sepsis. His nurse reports increasing gastric residuals and a few episodes of apnea and increasing abdominal girths.


Suspect NEC. Order X-Rays of abdomen. Check CBC and platelets. Check stool for blood. Repeat septic work up.
NEC1
Apnea, O2 Sat 75%
HR 182, BP 75/45
Appearance: Cyanotic
Pale and lethargic with abdominal distension. Abdominal film shows gas in the peritoneal cavity indicating intestinal perforation.
Abdominal film shows gas in the bowel wall (pneumatosis intestinalis)
Correct Actions
Stop feeding by mouth, Start TPN, and begin antibiotics
Perform actions
Incorrect Actions
Decrease enteral feeding and delay physical exam and X-Ray
NEC2
"2 weeks later"
Resp. Pattern: Normal
RR 55, O2 Sat 96%
HR 161, BP 51/32
Transition Time: 2 min
Begin enteral feeding again
NEC3
"24 hours later"
RR 0, O2 Sat 70%
HR 142, BP 75/45
Transition Time: 45 sec
Intubate and provide ventilatory support. Treat for shock with fluid and pressors. Treat sepsis and obtain emergency surgical consult.
End
End

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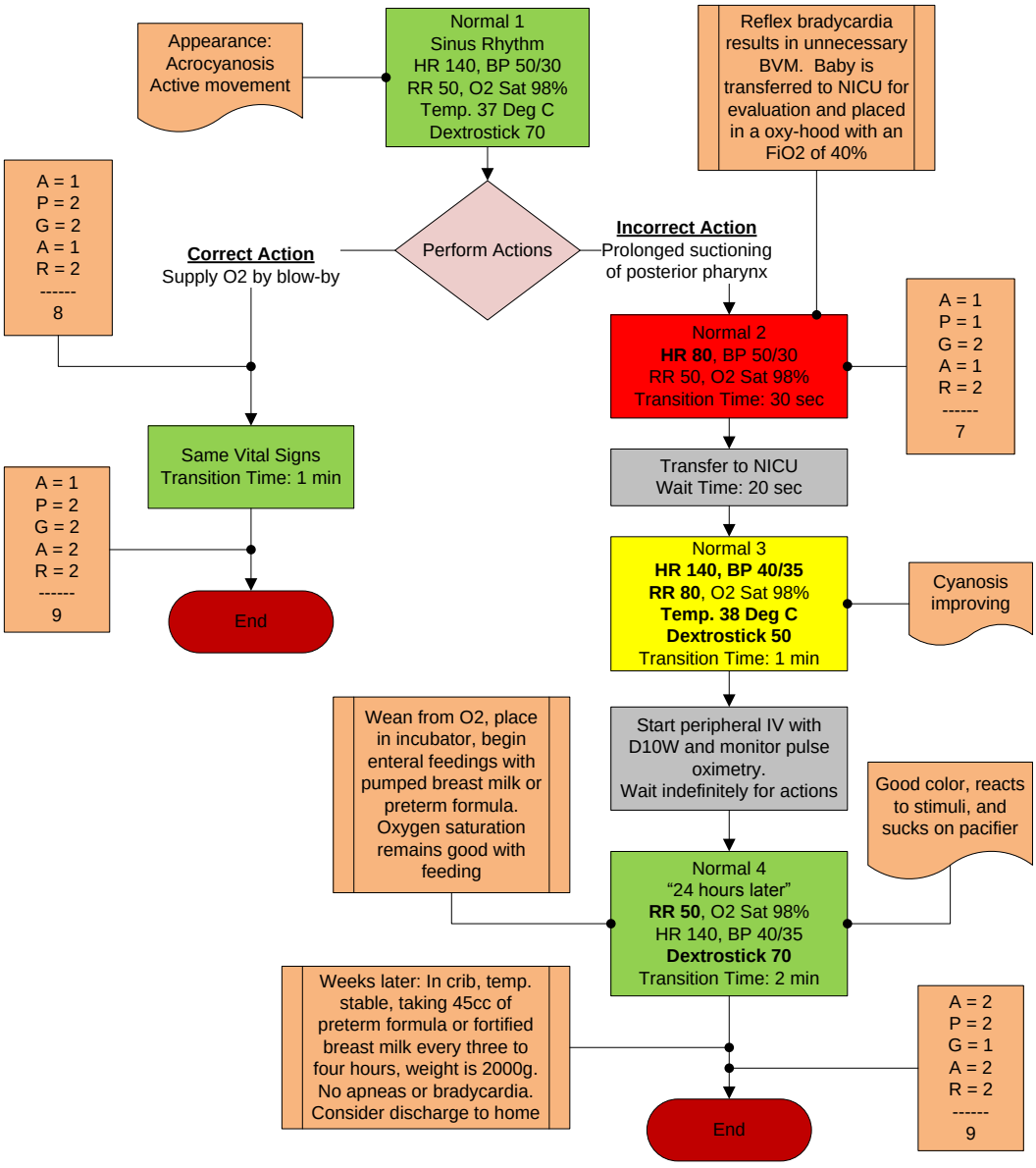
# Normal

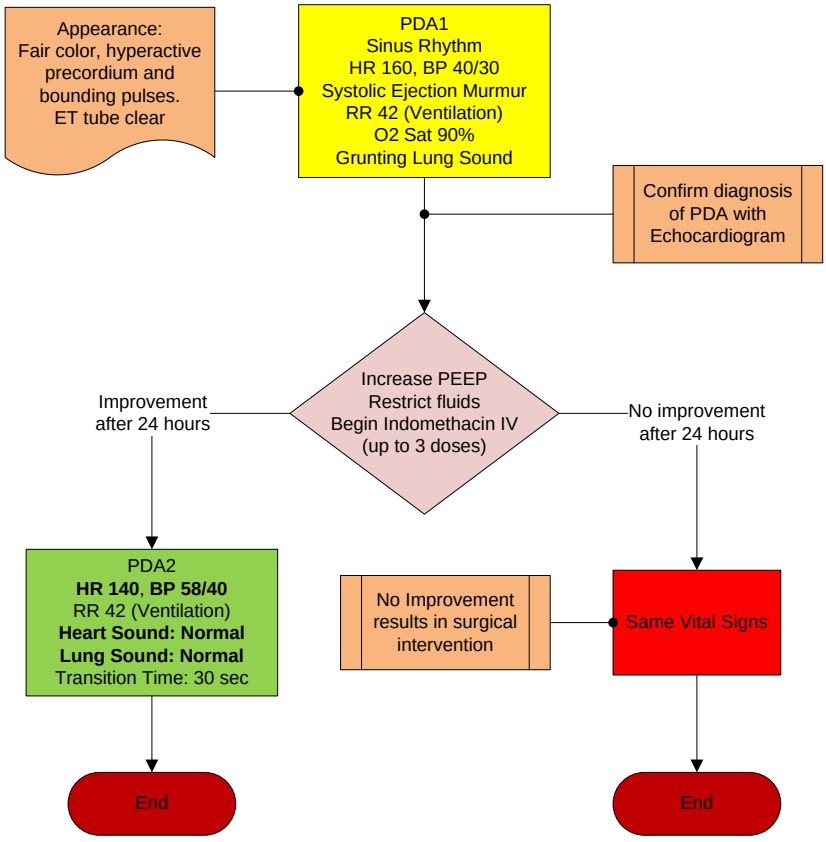
A mother is admitted to the hospital for preterm labor. She has had good prenatal care and her dates show the infant to be approximately 32 weeks. She received two doses of antenatal steroids, her membranes are intact and the baby's Lecithin/Sphingomyelin (L/S) ratio is 1.9:1. She continues to labor and the baby's scalp pH is 7.5. Despite attempts to delay delivery she delivers a 1300g infant. After suctioning and gentle stimulation, the baby begins to cry.



Premie HAL®

# Patent Ductus Arteriosus

On the second day of life, a premie who has had a good response to surfactant and ventilation develops deteriorating vital signs.



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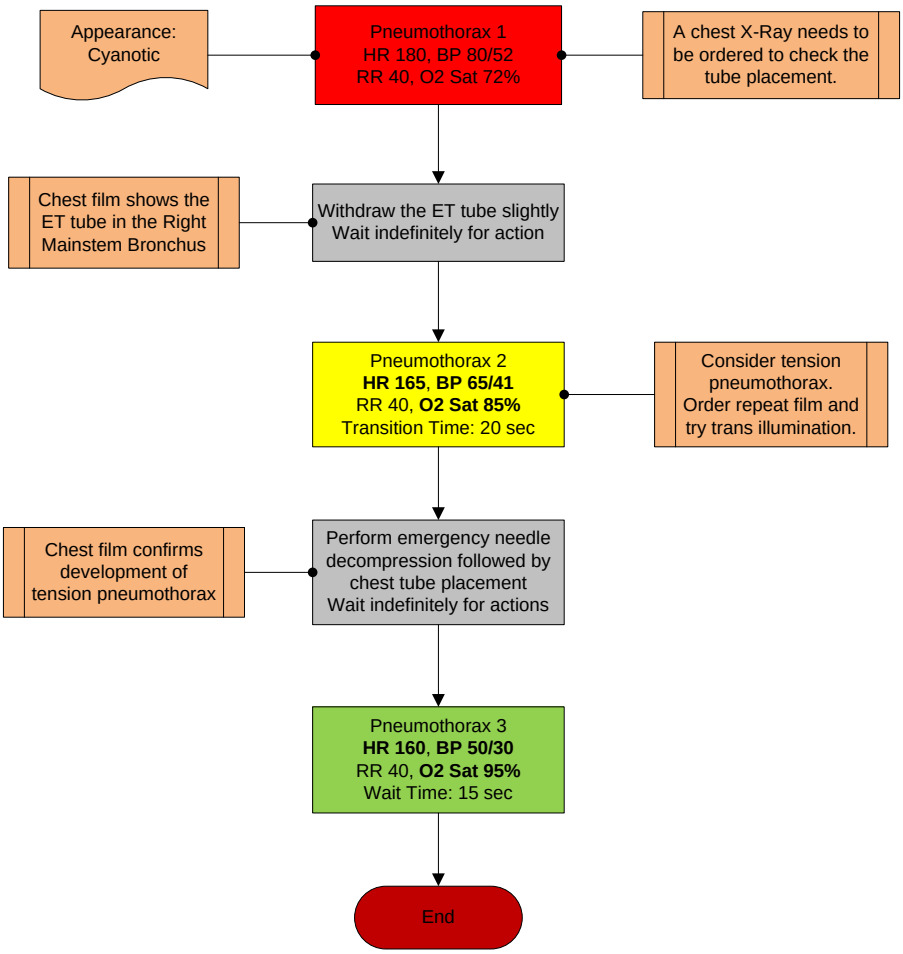
# Pneumothorax

This 32 week infant had no respiratory effort at birth and required intubation is now on a ventilator with a setting of 40  The mother had good prenatal care and received two doses of antenatal steroids prior to delivery.


Appearance: Cyanotic
Pneumothorax 1
HR 180, BP 80/52
RR 40, O2 Sat 72%
A chest X-Ray needs to be ordered to check the tube placement.
Chest film shows the ET tube in the Right Mainstem Bronchus
Withdraw the ET tube slightly
Wait indefinitely for action
Pneumothorax 2
HR 165, BP 65/41
RR 40, O2 Sat 85%
Transition Time: 20 sec
Consider tension pneumothorax.
Order repeat film and try trans illumination.
Chest film confirms development of tension pneumothorax
Perform emergency needle decompression followed by chest tube placement
Wait indefinitely for actions
Pneumothorax 3
HR 160, BP 50/30
RR 40, O2 Sat 95%
Wait Time: 15 sec
End

# Tips on Creating Scenarios

## THINKING IN TERMS OF PALETTE ITEMS

As described previously, palette items represent complete or partial groups of settings that have been stored as a single item. We learned how applying partial states will hold constant all settings that are left unspecified.

Not only does it take time to customize the palette, but a very large palette also becomes difficult to navigate. So, it is desirable to minimize the number of palette Items in each profile. To accomplish this, an experienced facilitator tries to create items that are as generally applicable as possible and can, thus, be applied to a wide range of scenarios. The key is to only include in your palette Items the settings that are directly related to the physiological event represented by that palette Item.

## SMART SCENARIOS

After reading the Details, Palette, and Scenarios sections of this guide, it should be clear how to build a scenario. You may have already tried building your own or modifying some of the factory presets. The following four guidelines will refine your ability to build the best possible scenarios.

1. How will the scenario begin?

The first thing to consider is the initial condition of the patient. Create a Palette Item to describe this condition. Make sure that this first step in the scenario is a complete state – that is, indicate some selection for each and every available setting on the Details page. Remember that only the settings you specify will cause a change in Premie HAL, and all other settings will remain constant. So, by starting with a complete state, Premie HAL's condition will always be the same when the scenario starts, regardless of what he was doing previously.

Likewise, the "transition duration" of the first step in the scenario should be zero, indicating that changes are applied immediately.

There is one point that can cause confusion and warrants further explanation. It is an extension of the above discussion of partial states. The issue is best illustrated through the following example:

Suppose that you are creating a Palette Item to start your scenario. In this case, you have decided that the patient will be apneic. The question is, "How should the lung sounds be set?"

Most people's first inclination is to set the lung sounds to "none." This is incorrect, despite apnea. Obviously, no lung sounds should be heard during apnea, but since you have already set respiratory rate to zero, none will be. (Sounds are synchronized to the breathing cycle.)

What you are really setting here when you choose a lung sound is the condition of the lungs, given respiratory drive. That is, if the patient's respiratory rate were changed from zero, what sound would be heard? Assuming that the lungs themselves are normal in this scenario, you would choose "normal" for the lung sound setting.

Then, as the scenario progresses, if the patient starts breathing, there will be no need to set the lung sound again. It will already be set. The same principle applies to the heart sound and other settings.

2. Include notes to guide the facilitator during the simulation.

It is common for scenario designers, especially those who act as facilitators, to neglect the importance of notes in the scenario. They think that they will remember the learning objectives, patient history, and other details at the time they are ready to conduct the simulation. They usually don't, especially when revisiting a scenario months after creating it.

When you add "Wait" and "Wait Indefinitely" steps to a scenario, you have an opportunity to edit the item description. Use this description field to hold notes to the facilitator. Typically, scenario designers write notes in that space to indicate what the provider(s) or facilitator should be doing at that point.

Further, when saving the scenario, you may edit the scenario description. This is the best place to put patient history and any other longer notes and instructions.

3. Assume that providers will do the right thing.

Usually, you should create a scenario with the assumption that the providers will perform correctly. As long as they do, the scenario can be allowed to continue.

Naturally, you must be prepared for what might happen to Premie HAL when providers deviate from expectations. The consequences of such deviations can sometimes be included in the scenario, punctuated by "Wait Indefinitely" items. In other cases, the simulation will require more direct control by the facilitator via either the Palette or Details page.

4. Choose auto-response settings based on the scenario content and the objectives.

As you've seen, auto-responses can be used to free the facilitator's attention. They also enhance realism by presenting instant reactions to the care providers. On the other hand, sometimes it is not possible or desirable to determine the responses before the simulation begins. Different environments and applications call for different settings.

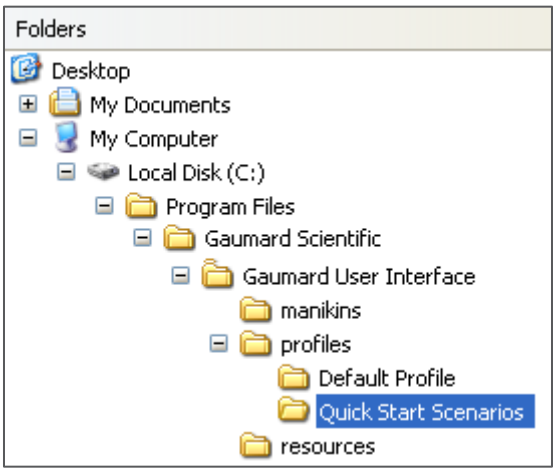
Some teaching practices are best done with the auto-response settings in Prompt mode. Responses must be triggered by a vigilant facilitator. Though it is slower and requires more attention, the benefit of Prompt over other modes is that the simulation can be allowed to go in any direction, and it will be possible to choose the response on a case-by-case basis.

Other learning exercises require a higher degree of automation. For such applications, most facilitators choose Auto mode for the auto-response settings. The key issue is standardized timing of symptom presentation. A consistent, repeatable simulation is essential for fair assessment of that care provider in relation to others and for the broader interpretation of results in the context of training validation studies.

When in doubt, it is best to choose Prompt mode, in which the facilitator will be given direct control of the responses as events are detected.

## FILE STRUCTURE

Advanced users may find it helpful to understand the GaumardUI directory structure. With direct file manipulation, one can easily move palette items and scenarios between profiles, as well as move entire profiles from one computer to another.




## PROFILES

In the GUI program folder is the "profiles" sub-folder (e.g. "C:\Program Files\Gaumard Scientific\Gaumard User Interface\profiles\"). All user information is saved there, and it is the only folder that should be modified manually. In the example shown, notice that there are 2 profiles in this installation, "Default Profile," and "Quick Start Scenarios."

## PALETTE ITEMS

Saved as "*.plt" files, palette items in each profile are located at the top-level of each profile folder. To copy palette items from one profile to another, copy the .plt file found in the source profile folder.

## SCENARIOS

Scenarios are stored as sub-folders within profile directories. Scenarios can also be transferred between profiles by copying the scenario folder and its contents.

## NEVER...

Modify files in the “resources” directory or those at the top-level of the “Gaumard User Interface” directory.

Manipulate files or folders while the GaumardUI software is running.

Modify or delete “*.dll,” “*.scn,” or “*.sys” files.

# Troubleshooting

Use the following table to find causes and solutions to a number of possible problems.

| Symptom | Possible Cause | Solution |
|---|---|---|
| **Communication never gets established or is lost**<br><br>**(blinking communi-cation indicator is consistently red)** | Battery is discharged | Turn off the software and plug “charger” adapter to the simulator. The charger’s LED will turn green when the simulator is completely charged. Do not turn on the GaumardUI software until the charging process is complete.<br><br>The adapter labeled “Power Supply” does not recharge the battery.<br><br>Disconnect the “Power Supply” and follow the charging procedure explained above. |
| | Computer is too far away from simulator | Get simulator closer to computer. |
| | RF module is not connected | Close the GaumardUI software and connect the USB RF module to the tablet computer. |
| | Trying to communicate with a different simulator | After clicking the GaumardUI icon, select the name of the applicable simulator and click “Start”.<br><br>On the menu bar go to Setup> Options> Environment and select FIXED. Then, enter the simulator’s serial number in the text box. Finally, restart the software. |
| | Multiple simulators are on at the same time. | Select different channels for each of the simulators, and then turn them on one at a time, meaning: Wait until a link has been established between the tablet and the simulator (the yellow window goes away).<br><br>Only after that, start running the GaumardUI software in the second tablet, and so on for the rest of the simulators. To do so, go to menu Setup → Options → Environment → Select “Auto change to channel: #” (# = number from 1 – 11). |
| | All others | Close the GaumardUI software and unplug the RF module for at least 5 seconds, then plug it back in. Restart the software and wait for initialization. On the menu bar go to Setup>Options>Environment and select FIXED. Then, enter the simulator’s serial number in the text box. Finally, restart the software. |

| Symptom | Possible Cause | Solution |
|---|---|---|
| **Simulator doesn't run for the time specified on the manual** | Battery not charged, charger requires reset | Turn off the software and unplug "charger" adapter from the wall and the simulator for 1 minute. Reconnect the "charger" to the wall and the simulator. Unplug the charger when the charger's LED turns green indicating that the simulator is completely charged. Do not turn on the GaumardUI software until the charging process is complete. |
| **Simulator doesn't respond to any command even that blinking communication indicator is consistently green** | The computer is properly communicating with a different simulator. | On the menu bar go to Setup> Options> Environment and select FIXED. Then, enter the simulator's serial number in the text box. Finally, restart the software. |
| **Commands are taking longer than usual to take effect or simulator is not reporting every action (blinking communication indicator is consistently yellow)** | Distance between computer and simulator is reaching its limit<br>or<br>there are too many obstructions between (walls, etc) | Get simulator closer to computer or move away from obstructions |
| | There's too much RF interference either from another Gaumard tetherless simulator in the vicinity or an RF radiator. | Try changing the RF channel by going to the menu for Setup → Options → Environment → Select "Auto change to channel: #" (# = number from 1 – 11). |
| **GaumardUI has set the power mode to STAND-BY automatically** | The battery on the simulator is depleted | Turn off the software and plug "charger" adapter to the simulator. The charger's LED will turn green when the simulator is completely charged. Do not turn on the GaumardUI software until the charging process is complete.<br>The adapter labeled "Power Supply" does not recharge the battery. |
| **"RF module not found" message is displayed when GaumardUI is started** | RF module not connected | Connect the RF module to any USB port. |
| | RF module not identified by the computer | Close the software and disconnect the RF module for at least five seconds, then plug it back in and restart the software |
| **Chest compressions are not properly detected or not detected at all** | Is the communication indicator panel consistently yellow? | See solution above in section making reference to "blinking communication indicator is consistently yellow" |
| | Is the respiratory rate set to "0 / min"? Chest compressions are only detected when the respiratory rate is set to 0 per minute (0 / min). Otherwise they are ignored | Set respiration rate to zero |

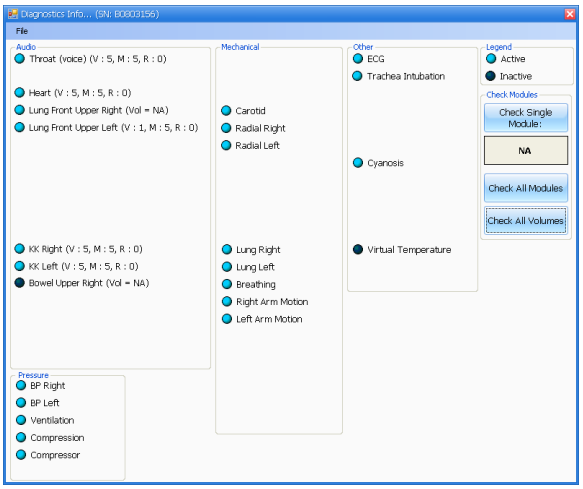
| Symptom | Possible Cause | Solution |
|---|---|---|
| | | |
| | All others | See “Calibration Wizard” section inside User’s Manual |
| **Artificial ventilations are not properly detected or not detected at all** | Is the communication indicator panel consistently yellow? | See solution above in section making reference to “blinking communication indicator is consistently yellow” |
| | All others | See “Calibration Wizard” section inside User’s Manual |
| **Simulator’s chest does not rise with artificial ventilation (e.g. BVM)** | Simulator not running | In some simulators, the trachea is disconnected from the lungs when they are not on. |
| | Disable lung/s | Enable the lungs from “Detail” page on the GaumardUI software |
| **Low chest rise (or no chest rise at all) while breathing** | Wrong settings or disabled lungs | Make sure lungs are enabled and both respiration rate and inspiration percent are different than “0”. Try changing the respiration rate to a different value, and if still nothing happens, try turning the restart the simulator. |
| **Pre-built scenarios don’t show up** | | Select “Quick Start Scenarios” when starting the software.<br>Should user forget to do so, there’s no need to shut down the software and open it again in order to load the pre-built scenarios. Go to “File/Profile” menu and then select “Modeled Scenarios” |
| **A sound is absent or is not heard at desired volume level** | Volume not set to user’s criterion. | Every sound has a volume control. Play with the volume control to get it to the desired level. |

# Diagnostics

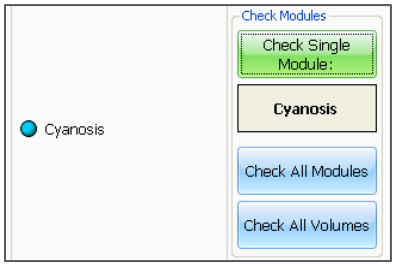
On the menu bard, click Help>Diagnostics to open the module diagnostics window. The diagnostics window is used to test the status of each of the modules equipped in the simulator during troubleshooting. Click "Check All Modules" to perform a full status test.

Active modules report light blue, and inactive modules report black. If there is a specific module that fails to respond please contact customer support.

**Modules for features not installed on the simulator will report inactive.**




To perform an individual module check, first select the module and click “Check Single Module”. Notice that the name of the module is displayed on the right column when it is selected.



# Replacement Parts

Contact Gaumard Scientific for a **complete list** of consumables and replacement parts and their prices. C=Consumables; R=Replacements; A=Accessories; U=Upgrades; M = Factory Repair ONLY

| Item ID | Name | Type | Description |
|---|---|---|---|
| **S3009.001** | A/C Virtual Monitor | A | A/C Powered 17" Touch Screen monitor and desktop |
| **S3009.002** | D/C Virtual Monitor | A | D/C Powered 12" Touch Screen Mobile Monitor with stylus |
| **S3009.010** | Battery | C | Rechargeable battery |
| **S3009.011** | Battery Charger | R | 100-240 V AC battery charger with label |
| **S3009.020** | Umbilical Cord Kit | C | Set of 3 |
| **S3009.023L.M** | Lower Left Arm | C | Lower left IV arm, medium color |
| **S3009.023R.M** | Lower Right Arm | C | Lower IV right arm, medium color |
| **S3009.026L.D** | Lower Left Leg Skin Cover | C | |
| **S3009.026L.L** | Lower Left Leg Skin Cover | C | |
| **S3009.027L.L** | Lower Left Leg | R | |
| **S3009.029R.L** | I/O Leg Skin Cover | C | |
| **S3009.031** | I/O Tibia Bones | C | I/O Tibia bones |
| **S3009.048** | Neonatal Filling Kit | R | Fluid dispensing syringe for Premie HAL |
| **S3009.060** | Simulator Transport Case | R | Soft storage and transport case |
| **S3009.080** | Simulated Blood Concentrate | C | |
| **S3009.081** | Silicone Oil | C | Oil-based silicone lubricant |
| **S3009.200** | Audio & Video Recording System | A | |
| **S3009.204** | Tablet PC | R | Wireless tablet PC with stylus control |
| **S3009.205** | Bump Case | R | Bump case for tablet PC |
| **S3009.206** | RF Module | R | Radio Frequency Module with USB connector |
| **S3009.EXW** | Two Year Extended Warranty | A | Extended warranty for years Two **AND** Three |
| **S3009.INST** | In-Service Training | A | Day of in-service training and installation |

# Warranty

## EXCLUSIVE ONE-YEAR LIMITED WARRANTY

Gaumard warrants that if the accompanying Gaumard product proves to be defective in material or workmanship within one year from the date on which the product is shipped from Gaumard to the customer, Gaumard will, at Gaumard's option, repair or replace the Gaumard product.

This limited warranty covers all defects in material and workmanship in the Gaumard product, except:

Damage resulting from accident, misuse, abuse, neglect, or unintended use of the Gaumard product;

Damage resulting from failure to properly maintain the Gaumard product in accordance with Gaumard product instructions, including failure to property clean the Gaumard product; and

Damage resulting from a repair or attempted repair of the Gaumard product by anyone other than Gaumard or a Gaumard representative.

This one-year limited warranty is the sole and exclusive warranty provided by Gaumard for the accompanying Gaumard product, and Gaumard hereby explicitly disclaims the implied warranties of merchantability, satisfactory quality, and fitness for a particular purpose. Except for the limited obligations specifically set forth in this one-year limited warranty, Gaumard will not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory regardless of whether Gaumard has been advised of the possibilities of such damages. Some jurisdictions do not allow disclaimers of implied warranties or the exclusion or limitation of consequential damages, so the above disclaimers and exclusions may not apply and the first purchaser may have other legal rights.

This limited warranty applies only to the first purchaser of the product and is not transferable. Any subsequent purchasers or users of the product acquire the product "as is" and this limited warranty does not apply.

This limited warranty applies only to the products manufactured and produced by Gaumard. This limited warranty does not apply to any products provided along with the Gaumard product that are manufactured by third-parties. For example, third-party products such as computers (desktop, laptop, tablet, or handheld) and monitors (standard or touch-screen) are not covered by this limited warranty. Gaumard does not provide any warranty, express or implied, with respect to any third-party products. Defects in third-party products are covered exclusively by the warranty, if any, provided by the third-party.

Any waiver or amendment of this warranty must be in writing and signed by an officer of Gaumard.

In the event of a perceived defect in material or workmanship of the Gaumard product, the first purchaser must:

Contact Gaumard and request authorization to return the Gaumard product. Do NOT return the Gaumard product to Gaumard without prior authorization.

Upon receiving authorization from Gaumard, send the Gaumard product along with copies of (1) the original bill of sale or receipt and (2) this limited warranty document to Gaumard at 14700 SW 136 Street, Miami, FL, 33196-5691 USA.

If the necessary repairs to the Gaumard product are covered by this limited warranty, then the first purchaser will pay only the incidental expenses associated with the repair, including any shipping, handling, and related costs for sending the product to Gaumard and for sending the product back to the first purchaser. However, if the repairs are not covered by this limited warranty, then the first purchaser will be liable for all repair costs in addition to costs of shipping and handling.

## EXTENDED WARRANTY

In addition to the standard one year of coverage, the following support plans are available:

Two-Year Extension (covers second and third years)

Call for pricing (USA only)

# Contact Us

**E-mail Technical Support:** support@gaumard.com
**E-mail Sales and Customer Service:** sales@gaumard.com
**Phone:**
Toll-free in the USA: (800) 882-6655
Worldwide: 01 (305) 971-3790
**Fax:** (305) 667-6085

Before contacting Tech Support **you must**:

1. Have the simulator's Serial Number (located in the left leg under the IM site)
2. Access to the simulator and the control computer if troubleshooting is needed.

**Post:** Gaumard Scientific
14700 SW 136 Street
Miami, FL 33196-5691
USA
**Office hours:** Monday-Friday, 8:30am - 4:30pm EST (GMT -4 Summer Time)

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